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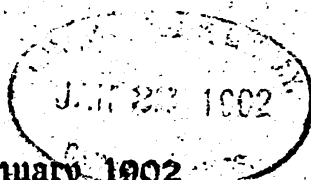
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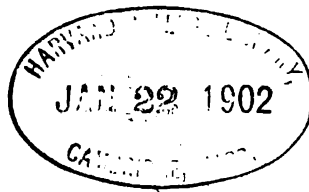
WHEAT PHOSPHATES, WITH MURIATE OF QUININE AND STRYCHN

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Original Articles.

CONTRIBUTION TO THE STUDY OF SPINAL FRACTURE
WITH SPECIAL REFERENCE TO THE QUESTION
OF OPERATIVE INTERFERENCE.*

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Twelve years ago Thorburn predicted that surgeons would "probably, in the near future, open the spinal canal with as little danger and as little hesitation as they now operate upon the cavity of the cranium"; adding that in order to permit of such an extension of therapeutic art it would be necessary still further to increase the accuracy of our diagnostic methods. This prediction has been already verified, and to no author more than to Thorburn is due the present accuracy of our diagnostic methods.

Experience has even shown that spinal operation is comparatively free from the drawbacks and dangers attending intracranial surgery. This fact, together with the serious, painful and usually fatal nature of the lesion under consider-

*Read by invitation before the New York Neurological Society, October, 1901; read also at the November meeting of the Boston Society of Psychiatry and Neurology.

ation, renders the question pertinent whether it is not wise to make early operation the common custom, in the hope, not only of relieving pain, and of improving the course of the average case, but even of saving an occasional patient from helpless invalidism if not from death. This is the main question, the discussion of which this paper is intended to reopen.

It is especially desirable that the question be discussed whether we really have reliable symptoms establishing (except through their persistence) irremediable crush of the cord; for if we have not, are we doing justice to the patient when we rely on the time-honored dictum that the damage was done at the moment of impact, that the pressure of fragments has been spontaneously relieved, and that nothing can be accomplished by operation? Enough cases have been published, both operative and non-operative, with more or less complete restoration of function after initial symptoms accepted by Kocher and others as indicating complete transverse lesion of the cord, to establish the fact that such lesions are sometimes capable of considerable restoration (Hammond², Lloyd³, Honan⁴, Israel⁵, Korteweg⁶, Pyle⁷, and others), and Case III of this paper may be added to the list. It is to be understood at the outset, therefore, that though we may follow the classification of Kocher⁸, Bastian⁹, Thorburn¹⁰, and others, the terms complete and incomplete lesion should not imply that the symptoms of the former are necessarily incapable of amelioration. This distinction has an important bearing on the question of operation, for Kocher states (p. 479) that operation is out of the question in case of total transverse lesion, though in case of partial lesion we may operate later, when long continued pressure is shown. In discussing the question of operative interference I shall claim no originality in venturing to dissent from these views on the ground (1) that we have no symptoms from which we can assert at the outset that the cord is crushed beyond, at least, a certain degree of repair, and (2) that we cannot predict which cases will fall into his second category, and that early operation in all doubtful cases will not only accomplish all that late operation will do for these cases, but it will be

performed to better advantage before reparative processes with adhesion and callus have appeared.

I shall first review the symptomatology, illustrating by personal observations, then discuss the prognosis and the question of operation, then consider briefly such points in the technique as seem appropriate.

SYMPTOMATOLOGY.

Motion.—Fracture of the spine with complete transverse lesion of the cord is accompanied by immediate relaxed motor paralysis involving the parts below the level of the lesion. There is entire absence of rigidity, of spasm, convulsive movement or other irritative sign in the motor sphere. The statement that signs of *motor* irritation may appear at the level of the lesion seems based rather upon theoretical considerations than upon actual observation.

Partial injury to the cord, including the results of hemorrhage, may be indicated by a slower onset of paralysis, by a unilateral or irregular distribution (affecting, for example, the arms more than the legs), by the preservation, or comparative preservation of reflexes and by the rapid improvement.

In diagnosing the level of the lesion by studying the muscles involved in the paralysis, the tables of Thorburn, based on clinical rather than on anatomical or experimental considerations, have stood the test of practical application. It would appear that the motor symptoms may reach a much higher level than the sensory, at least in case of lesion of the lumbar enlargement. This may be illustrated by the following example, in which the area of anesthesia after operation reached no higher on either side than the sacral distribution, whereas the motor paralysis included the muscles supplied by the lumbar segments.

Case I.—A man of middle age fell from a second story window striking on the middle of the back. Paralysis followed. He was taken immediately to the Massachusetts General Hospital, entering the service of Dr. Conant, who kindly allows me to report the case. He was seen also by Drs. Baldwin and Paul who concurred in advising operation.

There was complete relaxed motor paralysis of the lower limbs. There was total anesthesia up to the groin on the right; on the left the anesthesia was limited to the outer aspect of the front of the leg below the knee, to the back of the leg and to a strip on the back of the thigh, the saddle-shaped area, the perineum, the scrotum and penis. (See Figs. I and II.) The reflexes were entirely wanting, including the knee-jerk, plantar, cremaster, abdominal and epigastric. Retention of urine was present. There was excoriation over the first lumbar spine with infiltration of the tissues. The first



Figs. I and II

Figs. III and IV

Figs. I and II. Areas of total anesthesia in Case 1, before Operation. Fig. III and IV. Anesthetic area in Case 1 after operation, showing disappearance, on the right, of that part of the anesthesia due to pressure on nerve roots.

lumbar spine was depressed, and pressure in that region was extremely painful. Rolling the patient over caused excruciating pain at this point. The patient was markedly alcoholic and delirium tremens was anticipated without as well as with operation; it was therefore decided to operate.

Operation, performed by Dr. Balch, revealed fracture of the first lumbar vertebra involving only the lamina on the left, but on the right extending into the transverse process. The separated portion was removed, together with fragments of

the twelfth dorsal which were found impinging upon the cord. The dura was freely opened, showing no discoloration or change in the consistency of the cord. There was free flow of cerebro-spinal fluid. The dura was not sutured, and the wound was closed without drainage. The wound healed practically by first intention. Moderate pain in the back persisted during the day following operation, but had become less two days after operation, from which time the patient expressed himself as comfortable and allowed himself to be rolled over without complaint. On the seventh day the expected delirium tremens appeared and lasted three days. The anesthetic area in the right leg was reduced within a few days to the sacral distribution.

The lower extremities remained warm and dry till the seventh day, when the left foot became cold and remained so for two days, after which it was less cold but still far below the temperature of the other foot. The skin temperatures on the fourteenth day after operation were as follows: Dorsum of right foot 93° ; dorsum of left foot $88\ 1-2^{\circ}$; front of right thigh 94° ; front of left thigh $91\ 1-2^{\circ}$.

The temperatures of the dorsum of the hand and front of the forearms taken for comparison were as follows: Dorsum of left hand 85° ; front of forearms, left $93\ 3-4^{\circ}$; right $92\ 3-4^{\circ}$.

The temperature taken in the mouth at this time was 98° . At this date no material change had occurred in motion, sensation, reflexes or bladder and rectum control, though he could now feel the pressure of the urine or the flatus, over which he had no voluntary control. This patient can now (two months later) move the left thigh, and is very comfortable. Paralysis and reflexes are otherwise unchanged; there is no bed-sore.

This case will also be cited to illustrate the fact that unequal anesthesia does not preclude fracture, and will be referred to under the question of vaso-motor disturbance.

Dr. Warren¹¹, with the concurrent advice of Drs. Putnam, Baldwin, Taylor and myself, nineteen days after injury, removed, in 1896, the laminæ of the twelfth dorsal and first and second lumbar vertebræ in a case of spinal fracture presenting very similar symptoms, and exhibited the patient at a recent medical meeting. At that time he had slight toe-drop on the left and walked with slight assistance from crutch and cane. The bladder was still improving, and he had not used the catheter for a year.

Sensation.—In fracture with total transverse lesion the area of anesthesia is generally sharply marked, and at a level corresponding to the segment crushed, that is, at a level materially below the seat of lesion. There is no more fascinating clinical study than that of sensory areas as presented in detail by Starr¹², Thorburn¹³, Knapp¹⁴, Kocher, Seiffer¹⁵, and others, but for the purpose of the present résumé it must suffice to remind ourselves in a general way that most authorities agree that the upper roots of the brachial plexus supply

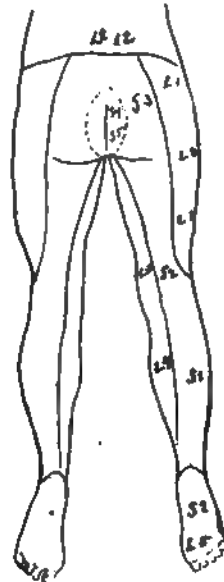
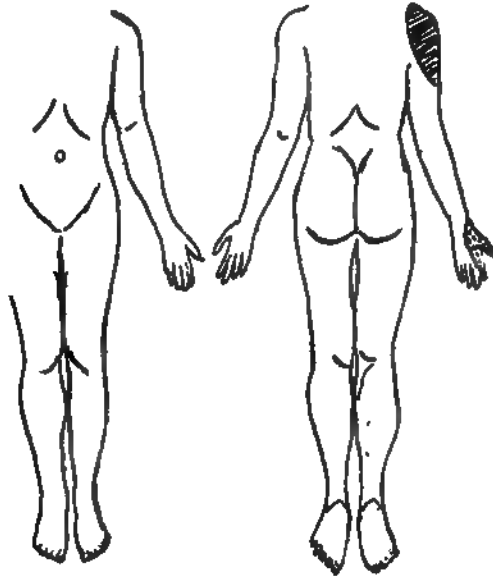


Fig. V. After Seiffer, shows that 12th dorsal and 3d sacral areas are adjacent, the areas supplied by intervening segments having extended down the limb.

the cap of the shoulder and the radial side of the arm and hand, while the lower roots supply a strip down the ulnar side of the arm and hand. The seventh dorsal segment supplies the ensiform region, the eleventh dorsal the umbilicus, and the lumbar the front and outer and inner aspects of the thigh to the groin and the inner aspect of the leg. The sacral supplies the region below the knee in front on the outer aspect, as well as the whole or greater part of the foot; it supplies

also the back of the leg, and a strip in the middle of the posterior surface of the thigh, and the saddle-shaped area, the perineum, scrotum and penis.

The fourth cervical segment furnishes sensation down to a line below the clavicle adjoining the distribution of the second dorsal. The absence of representation on the trunk, of the intervening segments, is explained by the fact that in the budding and growth of the upper extremity the areas supplied by the 5th, 6th, 7th and 8th cervical and the first



Figs. VI and VII. Area of anesthesia limited to supply of 5th cervical root, though 4th, 5th and 6th cervicals were severed.

dorsal are carried down the arm. This is well illustrated by Seiffer's modification of Bolk's diagrams.

For a similar reason the 12th dorsal closely approximates the 3d sacral on the buttock.

It is probable that *complete* anesthesia in any area implies loss of the segments above and below the one which supplies that area, as each part of the body receives sensory fibers from these segments. (Sherrington.) This is the probable

explanation of the fact that in the following case, seen in consultation with Dr. Mixter at the Massachusetts General Hospital, the only area of complete anesthesia was that of the 5th cervical, the middle of the three severed roots.

Case II.—A man fell upon a sharp object which produced a deep cut on the right side of the neck. Immediate paralysis followed, involving the *spinati*, the *deltoid*, *biceps*, *supinator longus*, *latissimus dorsi* and *pectoralis major* on the right. There was complete anesthesia over the cap of the shoulder in the distribution of the 5th cervical root. The picture was complicated by a paresthetic area in the radial distribution on the hand, perhaps due to injury of the musculo-spiral nerve.

Dr. Mixter found the 4th, 5th and 6th roots severed, and sutured them. Sufficient time has not elapsed to determine the final result.

It should not be forgotten that in case the roots are crushed at the same level as the cord the anesthesia will reach to the level of the lesion. In Case I of this paper, distribution of anesthesia showed that the roots were crushed on one side but spared on the other.

Below the well-known strip of hyperesthesia, which surmounts the anesthesia and points to root irritation, is apt to appear a strip of thermal anesthesia and of analgesia. (Kocher.) That this dissociation is not necessarily limited to the level of the lesion is shown by the following case, of which I am permitted to make a preliminary report. This patient was under the immediate care of Drs. Hinsdale and Washburn with Drs. Cabot and Mixter as surgical consultants. The operation was performed by Dr. Cabot.

Case III.—A young lady was thrown violently upward by an explosion, falling upon her back on the beams of the floor from which the boards had been torn away. Various heavy objects fell upon her. Besides fractures of all four extremities, of the left clavicle, of the nose, and of the sternum, there was complete relaxed paralysis of the lower extremities with loss of all reflexes, (knee-jerk, plantar, abdominal, epigastric.) There was an area of anesthesia bounded by a line just below the *mammæ*, surmounted by an area of hyperesthesia.

There was complete loss of control and of sensation in the bladder and rectum. There was extreme pain on passive motion and great sensitiveness over the third dorsal, with

soreness over the first and second dorsal spines. Dr. Cabot removed the arches of the three upper dorsal vertebræ which were found depressed and impacted. Improvement in general condition was steady, except during a day or two, within a week of the operation, when there were signs of collapse with twitching of facial and brachial muscles, and the face and neck were bathed in cold perspiration. The free flow of cerebro-spinal fluid probably had a bearing upon these symptoms which were, however, temporary.

At the end of six weeks the sensation had so far improved that every touch was felt on both lower extremities, and the muscle sense had become normal in the left toes, but thermal sense was absolutely wanting on the left as well as on the right foot.

A large sacral bed sore was healing well. The bladder had been once evacuated voluntarily. The knee-jerk had returned, and became exaggerated with patellar clonus. Moderate Babinski reflex was present on the left; ankle-clonus had not appeared. The patient's general condition was excellent. No definite return of voluntary movement had appeared.

At the end of eight weeks ankle-clonus and Babinski reflex were well established. Nine weeks after operation the patient could flex the left thigh voluntarily, and two days later she could also separate the knees, and extend and flex the toes on the left fairly well, and could do so slightly on the right.

The superficial temperatures at this time were: Dorsum of right foot 94.6, left foot 95; front of right thigh 92.5, left thigh 92.5; dorsum of right hand 90.8, left hand 91.2; upper arm, right 91.5, left arm 91.2; right side of neck 94; right cheek 93.2, left cheek 92.5. The temperature taken by the mouth at this time was 98.4.

Since that time I have not seen her as she returned to Philadelphia, but I am informed she is still improving, though not able to sit up.

Whatever may be the final outcome of this case it certainly may be added to those showing that the classical symptoms of complete transverse lesion do not necessarily indicate a condition beyond repair. It also illustrates the fact that dissociation is not always limited to the height of the lesion. This symptom may point to the fact that the force of the crush is expended with more violence on the gray than on the white matter, thus producing a condition analogous to syringomyelia. The pathological evidence offered, for exam-

ple, by Thomas¹⁷ is instructive in this connection. It will be remembered, however, that at the last meeting of the American Neurological Association, Thomas¹⁸ presented a case of tumor outside of, and pressing on, the cord in the upper dorsal region, in which case dissociation was present on the whole body below the lesion; he also quoted Strümpell as observing a similar condition. Dr. Baldwin found a similar dissociation in the anesthetic areas of a case of fracture after successful operation by Dr. Mixter. It has been suggested that possibly this symptom may arise from root injury.

Incomplete anesthesia points to incomplete lesion of the cord. The same is generally but not invariably true of anesthesia of limited or of unilateral distribution. It is generally true of anesthesia limited to regions far below the level of the lesion and in general the varying modification of the different forms of anesthesia at different levels points to incomplete lesion.

Injury to nerve roots alone sometimes appears in the cervical region after stretching and bruising, perhaps with temporary displacement of vertebræ and rupture of ligaments (distortion). In this lesion the sensory symptoms, like the motor, are apt to be limited to the arms. Courtney¹⁹ has discussed this subject in detail and given cases. This condition is illustrated by the following case,

Case V.—A gentleman twenty-nine years of age, ran down the beach and dove too perpendicularly, striking the top of the head. He was not unconscious. When he first realized where he was he tried to put up his arms and found he could not, then tried to move his legs, also unsuccessfully. He was cold. The head was stiffly bent forward. The use of the legs and right arm returned one-half hour after the accident, but it was four or five days before he could use the left arm at all. When I saw him three months later there was moderate tenderness over the cervical region and a distinct swelling over the transverse processes of both sides. There was no paralysis of motion or sensation and no disturbance of reflexes.

The following case seen with Dr. Jackson represents a less degree of the same lesion.

Case VI.—An athletic gentleman of thirty-one, riding in a

hurdle race, was thrown violently over the head of his horse. He turned a somersault and struck on the back of the neck, bending the head violently forward. He picked himself up and walked away though in a dazed condition. There was no numbness and no loss of power. Besides the general lameness and soreness there were pains in the arms and stiffness in the neck. This pain rapidly grew worse on the third day. When I saw him, nine days later, the pain had lessened, but it could be started at any time by slight stroking of the ulnar side of the arm though deep pressure in that region showed no sensitiveness. A tingling and prickling sensation on the ulnar side of both arms was constant. The neck was still somewhat stiff.

The diagnosis "local concussion of the spine" though much less frequently made of late than in former times has still been applied to such cases by certain authors, for example by McCosh²⁰.

Vesical, Rectal and Vaso-Motor Symptoms.—Retention rather than incontinence of urine is the rule in all varieties of spinal fracture with injury to the cord, even when the lesion involves the lumbar region. This probably shows that, even when the sphincter is relaxed, the mechanical conditions are such that the urine does not escape when expulsive force is lacking, so long as the bladder is not over-distended.

There may be either retention or incontinence of feces, more often the former, even though the sphincter be relaxed. The sensation in the rectum and bladder may be preserved in incomplete lesion even though voluntary evacuation is impossible, so that the patient may feel the pressure of flatus or urine over which he has no voluntary control.

The symptoms referable to vaso-motor disturbance are varied and baffling. The most common observation is a rise in the superficial temperature of the lower extremities allied to that observed in hemiplegia from cerebral hemorrhage. This condition is apt to be replaced later by coolness of the extremities and sometimes though not usually, by marked coldness. The skin is generally dry. The rise of local temperature may perhaps be explained by the dilatation of superficial blood vessels due to cutting off the vaso-constrictor influence of the bulbar centers. The subsequent fall may be ex-

plained by the gradual resumption of function by vaso-motor centers previously rudimentary in the cord itself. Such, at least, is the explanation given by Porter²¹, for the corresponding symptoms appearing in the frog after cutting the spinal cord.

The absence of sweating tends to fortify the theory that the principal sweat center lies in the medulla, the fibers being interrupted in their spinal course by the lesion. The absence of sweat combined with congestion of the skin offers additional proof (not needed) that sweat secretion is dependant on specific nerve fibers, not primarily on heat.

The profuse sweating of neck and face in Case III was probably due to irritation of the sweat fibers in the upper dorsal region. It has been demonstrated in the cat that the sweat fibers to the upper extremity leave the cord in the fourth to the tenth thoracic nerves, pass into the sympathetic chain, then upward to the first thoracic ganglion, passing out of the ganglion by the gray rami communicating with the nerves forming the brachial plexus (Langley²²).

Reflexes.—The fact is now generally recognized that the knee-jerk is lost in case of complete destruction of the cord though the pathology of this condition is still under discussion. Cases of spinal fracture offer no exception to the rule.

The superficial reflexes are also generally lost or diminished in these cases, probably always lost in complete lesion. That this loss is not necessarily limited to the reflexes below the lesion as shown by Case I of this paper, in which case the epigastric and abdominal reflexes were lost, as well as the cremasteric and plantar, though the lesion was at the twelfth dorsal and first lumbar.

The Babinski reflex is a common phenomenon in the course of these cases and may appear when no other reflex is present.

Local Signs.—These are generally most unsatisfactory. Either no irregularity is to be detected or an irregularity of doubtful import. Sometimes, however, a distinct knuckle is present and again a distinct depression of the spinous process or a sudden deviation from the vertical line. When such defi-

nite signs are present their aid is invaluable, especially if accompanied by infiltration of the over-lying tissues, together with great tenderness on pressure, and by local pain, becoming extreme when the patient is rolled. Fractured sternum always suggests fracture of spine.

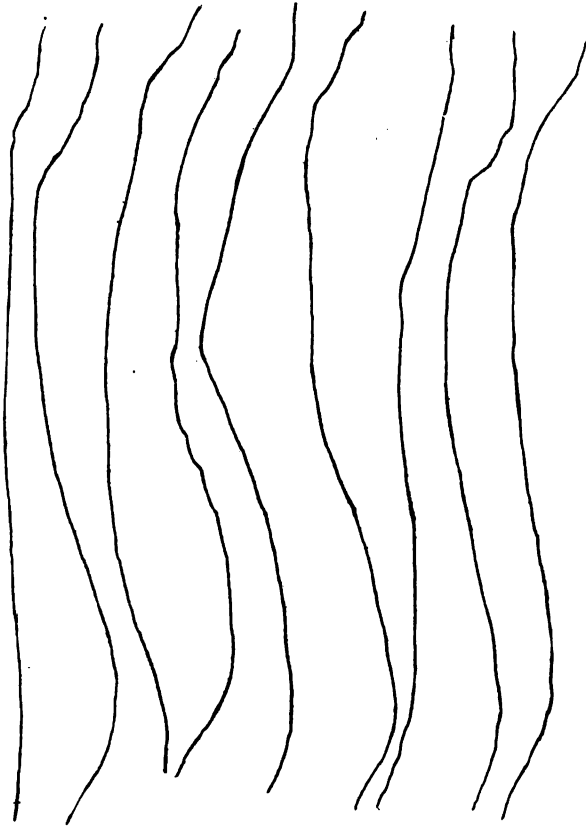


Fig. VIII. Showing variations in dorsal curves in healthy students of gymnastics. All taken facing to the right.

It would seem hardly necessary to mention the physiological irregularities familiar to those who frequently observe the back, and yet it is probable that such irregularities have been mistaken for signs of serious injury by experts as well

as by practitioners who have not had occasion or interest to study this portion of the body. I take this opportunity to show the tracings taken from diagrams representing the routine examination of healthy students at the Boston Normal School for Gymnastics. I am under obligation to the Director, Miss Amy Homans, for the opportunity to copy them. It should also be stated that these curves were taken from newcomers, unmodified by training of the school.

The prominence of vertebra in this picture bears a suggestive resemblance to that of Fig. 1 in the Presidential Address²³ delivered this year before the American Orthopedic Association. The diagnosis made in that case was fracture, or dislocation, of the vertebra, or both, resulting from a fall, though the patient had full control over rectum and bladder, could move the limbs and complained of pain only in the back, sides and abdomen.

He remained in bed several weeks. After he had been up a few days the prominence was observed of one or two vertebrae in the (lower) dorsal region. This was found to increase.

Another picture represents a still more common irregularity. It may be taken, as the subject bends slightly forward and the prominence of vertebral spines in the lower dorsal and upper lumbar region is apparent as a normal photograph will show very readily. For anatomical reasons, flexion in the spinal column is freer in this region than in the upper dorsal. If sprain of the back is present this position is habitually maintained, so that the prominence may be easily mistaken for a permanent one.

The Roentgen rays may be of value in diagnosis. Lathrop²⁴ states that the nature of a fracture can be easily made out by this aid. Kienbock²⁵ states that this procedure is important in showing the variety of fracture and whether the cord or roots are compressed, but adds that it is often undesirable on account of moving the patient about. In the cases which have come under my observation this method has not rendered material aid, though it must of course be of service in case of great displacement.

PROGNOSIS.

The prognosis in cervical cases without operation is generally grave. In Kocher's twelve cases the average duration of life was one week. In Courtney's collection of City Hospital cases the average death occurred within five days. In Baldwin's collection of Massachusetts General Hospital cases since 1870 (36) the average death occurred in five days, all being fatal.

The prognosis in fracture of the dorsal and lumbar region without operation is better than that of the cervical region but is still grave. Lloyd²⁸ quotes Burrell's statistics of Boston City Hospital cases including all localities and showing a fatality of 79% in 82 cases, and those of Gault, 80% in 270 cases. In contrast to these figures he has found a fatality of slightly below 50% in his exhaustive collection of reported operative cases. Keen quotes Chipault's statistics also, (40%) and Thorburn's (57%), and Horsley has laid great stress upon them in favoring operation. These statistics, though impressive are not infallible, since they are open to the objection that many unsuccessful cases are unpublished.

But even if final statistics made under conditions free from this objection, should reveal a percentage of fatality materially higher, the question would still remain whether the lessening of discomfort and disability is not enough to warrant operation. The difference between the bed and the invalid chair, between the healthy and the disordered bladder, and like considerations, should go far to turn the balance in favor of operation. While on the question of statistics, it may be pertinent to suggest that the collaboration of such reports as that of McCosh, while open to other dangers, would be free from the objection I have indicated. McCosh reports a personal experience of six cases of which four were fatal.

In pursuance of this plan Dr. Baldwin has kindly collected for me the cases operated on at the Massachusetts General Hospital since 1870. The operations number fifteen; there were ten deaths, showing a fatality of 66 2-3%. Dr. Munro has kindly sent me an analysis of thirteen personal cases, with fatality of ten. We have here, therefore, a record of 34 cases

not open to the objection of non-reported cases, and showing a fatality of twenty-four, that is, slightly over 70%.

THE QUESTION OF EARLY OPERATION.

The advisability of laminectomy for spinal fractures has offered a fairly fertile field for discussion since the famous verbal duel of Sir Charles Bell and Sir Astley Cooper.

We may perhaps fairly include among those on this side of the water who, with Thorburn and Kocher, regard the operation as justified under certain conditions, Keen²⁷, Lathrop²⁸, Deaver²⁹, Scudder³⁰, Roberts³¹ and McCosh³². Among those whose reports and whose remarks indicate a tendency to free recourse to early operation may be mentioned Hammond³³, Phelps³⁴, Burrell³⁵, Munro³⁶, Weeks³⁷, Means³⁸, Honan³⁹ and Abbe⁴⁰. This division is perhaps too arbitrary, and personal communication shows a general tendency to abandon the conservative view. That the operation is in some quarters questioned and even denounced is shown by an editorial in the *Medical News* of 1900⁴¹, as well as by the address of Gillette already referred to. The scathing remarks of Leyden⁴² were made before the introduction of modern surgical methods.

Of the four divisions under which Thorburn discussed the question in 1899 we may now eliminate two, namely (1) whether the operation is necessarily fatal, or so dangerous as to be unjustifiable, and (2) if successful is it likely to leave the vertebral column too weak to perform its functions. Apprehension regarding the danger of the operation has now been completely allayed. The question as to the weakening of the spinal column has been answered in the negative by the report of many cases. We are left only with Thorburn's second and third questions, namely, (2) how far are the spinal injuries curable without operation? and (3) what is the prospect of improvement by operation? Statistics gathered since 1889 have shown that modern methods of treatment other than operation have done little towards improving the prognosis. Burrell, who originally advocated extension and fixation, argued strongly already in 1893 for early operative

interference, the discussion taking place at a meeting of the British Medical Association, at which Thorburn took a more conservative view. Dr. Burrell assures me in a personal communication that he is still in favor of early operative interference, except in those cases of extensive fracture of vertebral bodies in which the Roentgen rays demonstrate extreme displacement. In such cases he deems it wiser to resort to immediate rectification and fixation. This exception is most reasonable; its validity was illustrated by the following case upon which Dr. Warren recently operated by my advice. He kindly allows me to put it on record.

Case VIII.—A man of forty-eight years fell in the hold of a vessel and was struck by a heavy bale, and was taken to the Massachusetts General Hospital, entering the service of Dr. Warren. Relaxed paralysis of lower extremities followed with loss of all reflexes, and with anesthesia to the groin. There was retention of urine. Marked kyphosis appeared in the dorso-lumbar region. No crepitus could be felt, but there was apparent displacement of the 12th dorsal and first lumbar vertebræ. Fracture of ribs and of the left femur complicated the case, and the patient's general condition was poor.

Operation (on the fourth day) showed great displacement. The cord was exposed with difficulty and was found much bruised. The dura was split and there were signs of considerable extra-dural hemorrhage. The wound was closed without drainage. The patient's condition grew rapidly worse and he died the day following operation.

This case was obviously hopeless whether operation, rectification and fixation, or the expectant plan were followed, but the remote chance of benefit from operation would perhaps bring it under Burrell's rule.

Is the prognosis of spinal fracture in general better with operation? It is doubtless true that in *most* cases a crush of the cord has taken place and that the pressure of fragments has been spontaneously removed. But even if the conclusion of Thorburn is correct that in *most* of these cases no benefit can accrue from operation, his deduction therefrom that operation is *unjustifiable* does not necessarily follow. To his statement that operation should be abandoned he made two important exceptions, namely, (1) injuries to the cauda

equina, and (2) cases in which the lesion is limited to the arches.

However sound these principles may be in theory would the best of diagnosticians claim that it is always possible to state with certainty whether the cord has been crushed, and whether the bony lesion is limited to the arches or not, and is there no danger that in pausing too long over this diagnosis we may sometimes fail to do our patient justice?

Kocher regards operation as out of the question in case symptoms of complete crush have appeared, but we have seen that these symptoms are not to be absolutely relied upon. How, then, are we to decide if not by these symptoms whether we have to do with a cord crushed beyond repair or with one capable of a certain degree of restoration? Kocher favors operation in cases of incomplete lesion when the symptoms have come to a standstill, but if we cannot always diagnose the incomplete lesion, nor deny in a given case that the symptoms may improve and finally come to a standstill, is it not wise to operate in cases in which a shadow of a doubt is felt?

In short, whether we have to do with complete luxation fracture or with partial injury, as fracture of the arch alone, whether the transverse process or the vertebral body is invaded, whether the fractured spine is so far displaced that the cord is hopelessly crushed against the body of the vertebra, whether in case of depressed arch the fragments are still pressing on the cord, whether hemorrhage has taken place inside or outside the dura, whether the nerve roots are crushed or irritated only, upon all these questions we may speculate, and upon some draw fairly accurate conclusions, but operation will often disclose a state of affairs quite at variance with our diagnosis.

Should not such conclusions lead us to give the benefit of the doubt to an operation which has proved at the worst neither materially dangerous to life nor detrimental to comfort, and which at least may be expected to lessen pain, to reveal the nature of the lesion with which we are dealing, and to place the cord in the best position for restoration of its

function when such restoration is possible, and if we may add to these comparatively modest claims the hope that an occasional life may be saved, and an occasional patient rescued from helpless invalidism of the most distressing character, should not the burden of proof be laid upon conservatism?

Whether the improvement sometimes seen in operative cases would have taken place without operation is a matter of speculation, nor are we perhaps yet in position to make a final comparison between the results of operative and non-operative treatment. The failure to report unfavorable cases arises not from any attempt at concealment of unfruitful operation but rather from lack of incentive to present a paper with no more attractive title than: "Case of Spinal Fracture; Operation; Death." The only fair criterion for comparison would be an experience accumulated during many years in which free, early operation has been practised. It is in the hope of adding incentive to the accumulation of such experience that this contribution is offered.

What we need now is more facts; those coming later will be best able to estimate their value. With regard to my personal experience I can only say that the course of such operative cases as have come under my observation has been on the whole more favorable than my previous experience and study of the literature would have led me to expect without operation.

OPERATIVE DETAILS.

Without attempting to encroach upon the province of the surgeon it may still be in place to allude to one or two details upon which the neurologist is apt to be consulted.

It is generally wise to open the dura freely; it is apt to be found bulging and tense, and the free escape of the cerebrospinal fluid does no harm, and may do good by relieving pressure and thus remove a possible bar to the repair of the cord. An edematous condition of the arachnoid is apt to appear, a condition which free drainage may do something to relieve. The additional advantage of opening the dura consists in the free view afforded of the cord itself. I am informed that a

remarkable case has been unofficially reported which still further emphasizes the importance of viewing the cord itself. In this case the cord was found severed and was immediately sutured. At the time of the report a certain degree of improvement had set in. The future history of this case will be awaited with great interest.

The next question the neurologist is asked is regarding the advisability of suturing the dura. Kocher states that this should be done to prevent serious symptoms from lessened pressure due to loss of cerebro-spinal fluid, but of late the custom of leaving the incision freely open has grown in favor and in no case, I believe, has untoward result followed. In Case III of this paper the twitching of face and arms was attributed to loss of the fluid, but the symptoms were only temporary. In no other case have I seen note of symptoms attributable to this cause.

The next question is that of drainage. It has been the usual custom till recently to secure a certain amount of drainage for at least a day or two. That this is unnecessary, however, is shown by the experience of various writers and was illustrated by Case I of this paper. This plan, if only equally successful with the plan of inserting drainage, offers the additional advantage of quick healing, agreeable dressing and freedom from danger of sepsis.

The question of operating immediately or waiting for the shock to subside is one falling rather under the province of the surgeon. Munro favors waiting if the shock is great, whereas Bouffleur¹² does not regard shock as contra-indicating immediate operation, arguing that the operation is directed toward the relief of the very cause of the shock. If a patient operated on during the shock produced by this grave injury should succumb during or immediately after operation, it would certainly indicate that the original lesion was of so serious a nature that recovery would be out of the question in any case, and immediate operation, though futile, would hardly be open to serious criticism. Still, in case of grave shock it would seem reasonable to delay, especially as some time is needed to ascertain the extent of the symptoms,

whether, for example, they may not be the temporary result of distortion. Early operation does not necessarily mean immediate operation. A delay of hours is not important, but that of days may be, since degenerative processes set in early, according to Lloyd on the fourth day.

CONCLUSIONS.

(1) There are no symptoms which establish (otherwise than through their persistence) irremediable crush of the cord.

(2) While total relaxed paralysis, anesthesia of abrupt demarkation, total loss of reflexes, retention, priapism and tympanitis, if persistent, point to complete and incurable transverse lesion, the onset of such symptoms does not preclude a certain degree at least of restoration of function.

(3) The prognosis without operation is grave.

(4) While the results of operation are not brilliant, they are sufficiently encouraging to warrant us in making the practice more general.

(5) In most cases it will be wise to operate within a few days of the injury, but a delay of some hours is advisable, partly on account of shock and partly to eliminate the diagnosis of simple distortion.

(6) We have no infallible guide to the extent of the lesion. The operation at the worst does not materially endanger life nor affect unfavorably the course of the case, and may at least reveal the lesion and lessen the pain; it may sometimes save a patient from death or from helpless invalidism of most distressing character. Instead of selecting the occasional case for operation, we should rather select the occasional case in which it is contra-indicated (the patient with great displacement of vertebræ, the patient with high and rising temperature, the patient plainly moribund, the patient still under profound shock.)

(7) The dura should be opened freely; it need not be sutured; drainage is not necessary.

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REPORT OF A CASE OF EPILEPSY PRESENTING AS
SYMPTOMS NIGHT-TERRORS, IMPELLANT IDEAS,
COMPLICATED AUTOMATISMS, WITH SUBSE-
QUENT DEVELOPMENT OF CONVULSIVE MO-
TOR SEIZURES AND PSYCHICAL ABERRA-
TION.*

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The following case is illustrative of a large number which only late in their course come under the care of the alienist; first manifested in childhood, early indications of the disease are vague and of a character often not appreciated; but they clearly evidence undeveloped, unstable, or degenerate nerve centers, as the later and more violent symptoms express further pathologic involvement of the affected organ. As in all cases rooted in heredity, the problem presented is one of prevention rather than cure. The course of the morbid process can only be modified by careful regulation of the details of the patient's life, and the earlier such regulation is begun the greater are the chances of obtaining results. It follows, therefore, that the first symptom stamped with the impress of a morbid heredity becomes of the greatest significance. The clinical report which follows traces through its different stages a case of epileptic insanity beginning as psychical epilepsy.

T. B., aged thirty-two, accompanied by his brother, voluntarily applied for admission to the Western Pennsylvania Hospital for the Insane, March 17, 1899, saying that he wanted to be cured of a strange malady from which he had been suffering for years. Unable to clearly describe his trouble, he states that he is in a condition which makes people fear him, has caused his wife to leave him, and that he now fears himself, having attempted suicide ten months previously. From September 1898 to March 1899 he had been an inmate

*Read before the Pittsburgh Academy of Medicine, October 28, 1901.

of the Allegheny County Home. Taken into the Hospital, necessary papers being signed later, he was regularly committed as an insane patient.

History as obtained from patient and relatives is as follows:

Family History.—Father dead under circumstances unknown. Mother living, is decidedly neurotic. A half-brother living and well. A full brother died at nineteen of some acute disease. Father of the patient is described as inordinately vain, domineering, of furious temper, and given to periodical drinking. Under the influence of alcohol he was most abusive and violent. Coming home in one of these moods he, one day, quarreled with his wife and, declaring that he "would break her heart," snatched the patient (then two years old) from her arms and was never seen afterward. Between five and six years later the patient was found in the home of a farmer, with whom the father had left him, about twenty miles from Pittsburgh. Although seven and a half years old when restored to his mother, the patient can recall no detail of his life during this period.

Personal History.—Now sent to school it was early noted that he did not apply himself to study, and although he attended regularly until his thirteenth year, he only learned to read (and that but indifferently), and never acquired the ability to do ordinary examples in addition and subtraction. The patient, in referring to his difficulty, says: "My one idea was of devilment and I just couldn't learn anything." During this period he was a great sleep-walker, frequently being found wandering about the house at night, and had night-terrors.

Self-willed and disliking school he, at thirteen, refused to further attend, and obtaining employment in an iron mill, was thrown in contact with older boys and rough men, described by the patient as a "hard lot;" in their company he soon acquired the habit of drinking. He rarely took whiskey, but drank all the beer, ale, and porter he could obtain. At sixteen, placed in charge of a small shop, he became very independent and so intolerant of control by his mother and step-father that he refused to remain longer at home and went to live at a hotel where his associates were men much older than himself, with whom he drank heavily. Here, he at one time saw on a table in the proprietor's room, a box of coin; "half in a spirit of mischief," he walked in and, taking a handful, (about a dollar and a half), went down stairs and spent it at the bar. For this he was arrested; pleading guilty, was sen-

tenced to ten months in jail. After serving his term he obtained a position, and, determining to reform, lived at home and stopped drinking "except for an occasional glass of beer." Soon again becoming intolerant of home restraint, he left home and lived among strangers until the age of twenty-two, when he married. During this period of six years he rarely drank to excess, but says that he averaged about a quarter of a keg of beer a week.

One year after his marriage he began to have "queer spells," the first coming on while at work. He describes these as follows: "I was told that I would suddenly leave my press, perform some childish act, then would return to my work. The act was of such a nature as to be interpreted as a bit of deviltry on my part, and my fellow-workmen would not believe me when I told them that I had no recollection of it. At table the desire would often seize me to do some queer thing, such as emptying the contents of one dish into another; or, if reading while having my evening smoke I would suddenly lay aside paper and cigar, cross the room, turn a chair up-side down, then returning to my cigar and paper would commence to read at the point where I had left off. Later, when told of these occurrences I could recall the desire to do them, but not the acts themselves. In many peculiar ways I experienced these feelings and desires; although realizing that they were foolish, *I just couldn't help doing them*. Shortly I begun to have spells at night; would twist the bed-clothing into ropes and knots, or get up and search through the pockets of my clothing, but would remember nothing about them when told the next morning." Various acts, of the same general character as those described, were performed at longer or shorter intervals during the ensuing four years; occurring oftenest at night, they came with increasing frequency during the day and were more complicated in character. One morning he took his baby from its crib, intending to carry it to its mother; allowing it to drop from his arms at the top of the stairs, it rolled to the bottom; following, he stepped over it, ate his breakfast and went to work, not knowing that anything unusual had occurred until he was told about it that evening. Upon one occasion he was out drinking with an acquaintance who made some slighting remark which greatly angered the patient, whereupon he soundly thrashed him. When aroused to consciousness the next morning he found himself in a station-house; was able to recall his feeling of annoyance and anger, but remembered no other detail of the occurrence. In another "spell," stepping from a moving street car, he was

found the next morning at the bottom of an embankment, only slightly bruised and with no recollection of the accident. He was at this time averaging two or three "spells" during the day, with three or four at night. Realizing that something was seriously wrong with him, and experiencing no improvement under treatment (he had consulted many physicians), he began to worry about his condition. Until this time (now twenty-nine), he had satisfactorily performed the various duties of machinist, engineer and switchman without once meeting with accident, but his employers, beginning to fear him, transferred him from place to place. Now working but a few days in the week he brooded upon future prospects for his wife and child; although stating that he never really wished to die, he had been heard to remark that if he could not be cured he would rather be dead.

On the afternoon of June 30th, 1898, without reporting to his foreman, he left the shop, took a train for Pittsburgh where he bought a revolver, and, crossing to the Allegheny parks, there shot himself in the left breast. When taken to the Allegheny General Hospital he gave a name not his own. He states that from the time of leaving the shop to his regaining consciousness he remembered nothing, with the exception of the haziest possible recollection of stopping somewhere in Pittsburgh where he must have purchased a revolver; the first clear knowledge of his surroundings was two days after the shooting. He made a good recovery and left the hospital within the week, returning to work within a month. On the first night after he returned to his home he became much excited, upbraided his wife with losing faith in him, and was violent. He states that he remembered nothing of this, but "was told." He attributes his excited condition to worry and state of continuous anxiety concerning his family's welfare. After this night his wife refused to occupy the same room with him, and because of frequently recurring "spells," his worried and anxious state of mind and the loss of his employer's confidence, he now gave up and went to the Allegheny County Home where he remained until March 1899, shortly before his coming to Dixmont.

Examination upon admission shows the patient to be well-formed and well-nourished; height, 5 ft. 10 1-4 in.; weight, 152 1-2 lbs. With the exception of flattened cranial arch and moderate cranial and facial asymmetry, he presents no stigmata of degeneration, and is a fine specimen of physical manhood. Tongue is broad, pale, flabby and tooth-marked, but clean; bowels regular, and there is no discoverable abnormality of any organ. The tendon reflexes of the

right side are slightly exaggerated as compared with those of the left, but there is no great deviation from the normal. The superficial reflexes are exaggerated; right cremasteric is plainly marked; left cannot be elicited. Muscle irritability is increased generally. Urine: dark amber in color, acid in reaction, sp. gr. 1030, dark ring of urates; contains neither sugar nor albumin.

During the first night in the hospital (March 18) he had an attack described by the attendant as follows: "Awakening he suddenly sat up in bed, glared about him, then fell back as though fainting. In less than a minute he was on his feet, overturned the mattress three or four times, picked up his clothing, carefully searching through each pocket, then returned to bed, sleeping until wakened in the morning." When, questioned about the occurrence it was found that he had no recollection of it.

March 19. Awakening from a light and disturbed sleep, he got up, and, running the length of the ward, made an attack upon the attendants. After being held for ten or fifteen minutes violence subsided and he slept.

March 21. This morning (9 o'clock) he suddenly fell to the floor where he lay "trembling or quivering from head to foot" for a minute or more, then arose and went about the ward as though nothing had happened. Examination half an hour later showed the tongue to be bitten. The patient states that this accident has never before occurred.

For a day or so following this attack, the patient was in a slightly dull and confused state, but, further than this, there were no manifestations. In the first month at the hospital he was given no medicine other than phosphate of sodium, as needed to combat tendency to constipation, with careful regulation of diet. During this period he had twenty-eight paroxysms (all nocturnal) of the following character: From a disturbed sleep he would seem to half awaken, twisting and turning his body and tossing his head, arms, and legs from side to side; this lasting from twenty seconds to a minute. Occasionally it would be followed by his sitting up in bed, staring about in a dazed manner with, on three or four occasions, attempts to get out of bed. Occurring as frequently as three or four times nightly (though usually but once) they were oftenest observed between one and four o'clock A.M. During the month of May he was placed upon sulfonal gr. X, given at bedtime. Paroxysms occurred every night but three; from one to four nightly; total, sixty-five. In time of occurrence and in general characteristics they did not differ from those occurring in April. At no time did he attempt to

perform complicated acts, such as getting out of bed, twisting the bed-clothing, etc.

June. Paroxysms every night but three, one to three nightly; total, forty. Of same general character; no complicated automatisms.

July. Now placed upon bromides (gr. X. *t.i.d.*) he had but twenty-seven paroxysms, in one of which he twisted the bed-clothing and made attempt to get out of bed.

August. Bromides were increased to gr. XV. *t.i.d.* He had nineteen paroxysms of same general character, but lighter and of shorter duration; no automatisms.

September. Bromides were continued as above. Twelve light attacks.

October, November and December presented nothing unusual, paroxysms occurring as in the preceding three months. It was noted, however, that he gradually became more irascible and surly and showed a tendency to domineer over weaker patients and attendants.

December 24. Following some slight difficulty with a fellow-patient, he fell in a typical epileptic paroxysm with clonic convulsive movements, which were more marked upon the right side of the body, and continued for a minute; after the convulsion he slept. Within an hour he had two more of like character and severity; these left him dull, dazed and stupid. In the following night he attacked the attendants in an automatism, and they were compelled to hold him for half an hour, after which he slept. In the morning he seemed much confused, his manner was best characterized as silly but, in the main, good-natured. His normal condition was not regained until three days later when it was found that he had no recollection of events occurring during the first day of the attack, and but indistinct recollection of the succeeding two days.

Shortly after this attack he manifested mawkish religious tendencies heretofore not shown; stated that he had not attended religious service ten times during his entire life. From time to time there were exhibited slightly exalted states in which he talked much of a sense of well-being; felt "as free and light as air," etc. Following these periods he was especially irritable, suspicious, and quarrelsome. Hitherto no marked alterations of the sensory perceptions had been noted, but subsequent attacks, when at all marked, and whether psychical or motor in character, were preceded by altered or perverted sense perceptions in some form.

January 4, 1900. He suffered an attack in which were manifested varied and characteristic phenomena of epilepsy

indicating the extent of involvement of the higher centers; it well illustrates the mechanism of development of intellectual and emotional states into irresistible tendency to action. The prevailing emotional condition resuscitates sensations, mental pictures, and even emotions recently or formerly experienced in the course of his conscious life, (or at least bearing reference to some actual occurrence), and, thus intensified, action promptly supervenes with, at this point, loss of consciousness and memory. I take the liberty of describing it somewhat in detail.

After some days of unusual depression and anxiety he became excited, demanding that he be allowed to see the doctor at once. When seen, he was in an exalted mental state, and so excitable as to be moderately incoherent. Desirous of telling me that he was experiencing some great change, he said: "I feel so differently—everything seems changed—all that touches me seems different from that it was—I feel as light as air." His face was flushed and manner mildly maniacal. Excitable condition continued until the following day when he was more irritable than usual. In the afternoon while at a game of cards with a fellow-patient, of whom he had been long suspicious, it was noted that he seemed preoccupied and "absent-minded." In the course of the game the patient inquired if his companion knew E. B. (mentioning a young woman of former acquaintance). Replying that he thought he had met her, and that she seemed a gay and jolly girl, the patient at once sprang upon him, saying that he would allow no girl of his acquaintance to be so insulted or to have her character called into question. Taken in charge by the attendant his fury continued; demanding that he be allowed to leave the hospital at once, he forced his way to the room of the supervisor, grasped him by the throat and attempted further violence. In this furibund state he was placed in restraint and continued to rave until six hours later, when, under the influence of large doses of sulfonal, he slept. At five o'clock the following morning he had a hard motor convulsion followed by stuporous sleep from which he awakened in a dazed, confused state, but inclined to motor activity. Referring to the paroxysm of the previous afternoon, he said: "I'm coming around all right doctor; I know I've had one of my spells, for I remember all about my feeling so much better for the last few days and I guess that meant I was getting ready for it. I don't remember much about the fuss of last night, except what led up to it. My first recollection is of seeing, just before falling asleep, a shadow on the wall which looked like a picture I had at home, entitled 'The Hand-

writing on the Wall.' I realized that it was only a shadow, or that it was imaginary, yet it appeared in vivid colors and in minute detail. I offered up a prayer and, at once there seemed revealed to me much that I had not previously known—what I had been and what I was to be," etc., etc. The patient here entered into detailed, though somewhat incoherent description of hallucinations of sight, and of hearing the voice of God; these formed the basis of the delusion (temporarily entertained) that he had a direct communication from God. One week later, upon recovering from this attack, he minutely described his suspicions and feelings of irritation toward the patient with whom he had been engaged at cards at the onset of the paroxysm.

In its subsequent course there were presented certain variations and modifications of the symptoms I have described, change in the character of the early stage of the paroxysms being the most prominent. The recollection of events leading up to the final outburst, and even of the sensory, ideal, and emotional contents of the psychical equivalent of the convulsion, seemed clearer. Later, there was distinct overlapping, or intermingling, of what might be termed the normal, or inter-paroxysmal and the abnormal, or epileptic states, with lessened appreciation in the former, of the morbid character of false sensations, ideas and beliefs experienced during the latter periods. Analysis of these phenomena involves consideration of sub-consciousness and states of dual consciousness, which elucidate many morbid psychic phenomena. Briefly, it may be said, that in this case, the conscious personality seems gradually to have been encroached upon, or merged into, the automatic or sub-conscious self.

Kept continually under the influence of bromides during the remainder of his stay in the hospital, there were no further attacks of typical motor convulsion, and but four to eight monthly of the irregular, semi-coördinated movements of the extremities during sleep. He was transferred to the Insane Department of the Allegheny County Home in November, 1900.

We have here a patient of psychopathic heredity, presenting in early childhood the phenomena of night-terrors and somnambulism, defective inhibition, precocious alcoholism, impellant ideas and obsessions, complicated automatisms, with subsequent development of convulsive motor seizures, and the psychical aberration so characteristic of epilepsy. The frequent attacks, which vary as to minor details, are uni-

formly progressive in their development, and evidence successive involvement of the intellectual, emotional, and motor spheres. As specific features of their epileptic nature we note: paroxysmal and periodic character, sudden onset, automatisms showing activity of the higher nerve centers attended with absence of consciousness, memory, and spontaneous will; sequelæ of epileptic occurrences such as confusion, suspicions, violent temper, and tendency to depression in the intervals—all controlled, or at least markedly modified by the administration of bromides.

Of special clinical interest among its varied psychic symptoms are: first, the earliest manifestation in the form of simple irresistible impulse unaccompanied by emotional states. We have, in the words of Ribot, "sudden impulse followed by immediate execution without the understanding having had time to take cognizance of it. The act has all the characteristics of a purely reflex phenomenon which takes place inevitably without any connivance of the will. It is a true convulsion which differs from the ordinary convulsion only because it consists of movements associated and combined in view of a determined result."

We next see irresistible impulses to theft, and to suicide and homicide, the last two being the outcome of emotional states; thus intensified they are automatically carried into execution. The automatic act is a very complex syndrome; it has been considered "the final term of a morbid process, of which the idea is the starting point and the anxious emotion the intermediate stage." (Ribot.)

In the progress of the disease there are frequently manifested anxious states having their origin in constant brooding over his condition, with its possible consequences to self and family, and we now note "obsession of emotional ideas" accompanied by impulsion, *i.e.*, irresistible action. Thus, the fleeting idea of suicide, which was never seriously entertained while in full possession of consciousness, is carried into almost successful execution under the influence of depressive emotions of which such act might be the logical outcome. In this case, we have seen that whether the idea was of some

simple act as theft, of discouraging outlook or prospect, or of injury received, that it has developed into complicated emotional states of which the patient was usually conscious; ending in the performance of acts resulting from the dominant emotion, but of which he subsequently has no recollection.

The later suspicions and delusions of persecution so characteristic of the epileptic psychosis, develop in like manner, with the commission of acts in keeping with the accompanying emotional state. Thus, under the influence of suspicions and ideas of persecution there is the accompanying emotion of anger, rapidly passing into wild and uncontrollable fury, followed by deeds of violence. With the advance of the cerebral degenerative process there is seen change in the character between the paroxysms, which more closely approximates that peculiar to the epileptic insane. Morbidly suspicious and irritable he is ever on the alert for offences, and whether these are real or imaginary, because of defect or abolition of the higher controlling or inhibitory powers, the intervening stages between idea and act are traversed as promptly and inevitably as the different stages of any reflex act.

The next stage in the progress of his disease is marked by the execution of irregular and imperfectly coördinated movements carried out during somnambulistic states; these, with the subsequent development of true convulsive motor seizures, complete the cycle of epileptic occurrences which here develop in the reverse order of that commonly observed; passing by almost imperceptible gradations from its first vague manifestation in irresistible impulse, through the stages of automatic act, emotional obsession with complicated automatisms, to motor convulsive seizures and that settled state of mind peculiar to the epileptic.

The earliest defect in inhibitory power, with, even in early life, irascibility and intolerance of parental control, must be considered as syndromes occupying a prominent position among the phenomena of degeneration. With the specific clinical features above named, the case presents a coincidence

and correlation of symptoms representing the onward progress and different stages of a psychosis which must have been degenerative from the beginning. Having its fundamental origin in defect of organization and inherited instability of nerve centers, we see early complication in the element of alcoholism, which may be regarded as one manifestation of the psychosis, but it is also a factor materially hastening, and perhaps modifying, the progressive development of the disease.

It cannot be said that we yet have definite knowledge of the underlying lesion in epilepsy; whether it be of structural peculiarity, or degeneration of the large cells of the second layer (Bevan-Lewis) or the peculiar gliosis described by Chaslin and Féré, the consequent nutritional impairment is revealed by symptoms which vary with the site of the cerebral lesion. Early manifestations in the case here reported are indicative of its origin in the higher cerebral centers, with gradual progression to involvement of the Rolandic area.

The medico-legal aspect of this case is indicated, in a general way, by the attempts to execute violent ideas (suicide and homicide). Whether considered from this view-point, or of etiology and clinical history, it presents many instructive features. Analysis of its changing manifestations—bearing as they do the “brand-marks” of the epileptic psychosis—shows them to be but different symptoms governed by the same laws.

A CASE OF MYELITIS, EXHIBITING THE RESULTS OF
CO-ORDINATION EXERCISES.*

BY JOHN K. MITCHELL, M.D., OF PHILADELPHIA.

Joseph Donohue, aet. 22, bartender, was admitted to the Orthopedic Hospital, April 14, 1899, with the following history: Family and personal history negative. He denies venereal disease altogether and presents no evidence of it.

He had typhoid fever in June of 1898, of no unusual severity, but was not able to go to work again until December of the same year, when he worked for two months, feeling very well. He then began to have numbness in the whole of the right foot, extending up to the knee, accompanied by weakness. It did not begin in the left foot until it was well advanced in the right and then extended in the same manner, spreading slowly upwards on both legs until it reached the trunk and stopped at about the level of the umbilicus. As the trouble advanced, the legs grew spastic and a girdle sensation appeared in the early months of 1899, which was, however, not very decided until a short time before his admission to the hospital. It is sufficient to say that at that time, (April 1899), his gait was very spastic on the right side, station was bad, knee-jerk was extremely exaggerated; there was ankle-clonus on the right side, knee-jerk somewhat less exaggerated and no ankle-clonus on the left. A condition of tetanus was readily developed by repeated blows on the patellar tendon of the right side. There was impaired control of the anal and vesical sphincters. Lying in bed the patient could use the legs strongly, but only for one or two successive efforts. He could not stand or walk. There was no wasting, hot and cold were well distinguished, but after a considerable interval; touch-sense was decidedly dulled from the lower quadrants of the abdomen downward; there was nowhere any tenderness except in a small area of the lower dorsal region of the spine, and no sign of any cerebral disturbance. The disease was considered an incomplete transverse myelitis, probably due to typhoid fever.

The possibility of its being due to an ascending neuritis, reaching and crossing the cord was considered, but the course of the trouble, as well as the character of the changes

*The case was reported and the patient exhibited at a meeting of the Philadelphia Neurological Society, November 26, 1901.

in sensation, seemed to negative this supposition. Neuritis as a consequence of typhoid fever is not at all uncommon, though I have never seen a case in which it affected the cord.

Myelitis as a sequel of typhoid is much more rare; my own experience includes but one other case, and that a doubtful one. It is to be regretted that we could secure no fluid from the spinal canal by tapping, as a microscopic study of it might have confirmed the diagnosis.

In the Spring of 1900 he was admitted to the hospital again. The only change at this time was that there was very marked spasticity of the left leg; but the whole condition had grown steadily worse after a preliminary improvement when he was first under treatment at the Infirmary. A lumbar-puncture was attempted June 1900, but no fluid was secured. This time careful treatment with exercises was begun and was continued during the summer. At first he was kept entirely in bed, the legs exercised with coördinate and resisting movements while he lay upon his back. The knee movements were chiefly simple flexion and extension, made slowly; then efforts to direct the feet to a given point, such as the hand of the attendant held above the bed 18 or 20 inches from the feet. He was allowed in three or four weeks to get up with crutches or sticks, and was instructed in standing exercises with his back against the wall, at first with the eyes open, afterwards with the eyes closed, and presently moving away from the wall a little. As his legs grew stronger, all these were more elaborated; his station improved progressively; he began to do a sort of goose-step movement, standing upright and raising the knee at a right angle with the body, then extending the leg upon it and throwing the foot far forward before it was put down; a similar movement followed with the other leg. He walked patterns drawn upon the floor, and practised in turning short in a small circle. Whenever one of these exercises was well done with the eyes open, he began to practise it with closed eyes. They were never allowed to go to the point of fatigue, and he was encouraged rather to do them for a short time several times a day than to attempt to do much at once, but it was six months before he grew strong enough to walk more than six or eight squares without resting.

At this time he had electricity and massage as well as the exercises. He was discharged in December very greatly improved. He returned in the latter part of April of the present year, finding that his legs were again growing weak and that if he walked enough to fatigue him at all, he lost control of the sphincter ani. The knee-jerks were less exaggerated

than before, and no clonus could be discovered in the left leg, though it was still present in the right.

I attributed this partial relapse to over-exertion, and put the patient to bed for an entire rest of two or three weeks. Blisters were applied to the spine on alternate days. The weakness of the rectal muscles was treated by electricity, and after about three weeks he was got out of bed slowly and co-ordinate exercises begun with a gradual increase. The improvement was rather astonishing, considering that this was his second relapse, and that relapses notoriously do less well than the original trouble.

(When the patient was shown before the Neurological Society the knee-jerks were both very spastic, there was ankle-clonus on both sides; both the patellar phenomenon and the clonus were less on the left side. The patient's station was perfect, whether the eyes were open or closed. He could stand on one leg easily, walked steadily forward or backward, and showed his excellent balance in various complicated movements.)

NEW YORK NEUROLOGICAL SOCIETY.

October 1, 1901.

The President, Dr. Joseph Collins, in the chair.

Contribution to the Study of Spinal Fracture, with Special Reference to the Question of Operative Interference.—Dr. George L. Walton, of Boston, presented a paper with this title.

Dr. Charles L. Dana said that his own experience had led him to believe that the operation is practically safe, and that the spinal column itself is not injured by the operation. He had not had any fatal results in his operative cases, about half a dozen in all, and two of them were cases of injury in the cervical region. It was a matter of astonishment to him that such long and severe operations could be done upon these patients without sacrifice of life. He must confess, however, that the ultimate results of these operations had not been satisfactory, according to his observation. He had seen some improvement in motion and in the bladder symptoms in these cases, but that had been about all, and it was quite possible that such improvement would have occurred without operation. If by clinical observation one could be sure that the cord was crushed one should not recommend operation. This could often be done. If there was a line of anesthesia coinciding with the line of paralysis, and this co-existed with the absence of knee-jerks he would feel almost positive that the spinal cord had been cut across, although there were certain exceptional cases affecting the cervical region which did not seem to follow this rule. It seemed to him that the operation performed by Lloyd, and which the speaker had seen employed by Abbé, was the quickest, safest and most effective. The author had done a service in bringing up this subject and urging a more persistent effort to relieve this distressing class of cases. The general opinion among surgeons was that these were cases which hold out but little hope of benefit from operation.

Dr. Edward D. Fisher said that he had had a number of cases of fracture of the spine under his observation, and in the main he would agree with the reader of the paper that an operation is advisable. He would do this because death rarely occurs as the direct result of the operation. Where there had been a fatal termination he felt that the same result would have occurred if there had been no operation. In two cases that had been under his observation, in which cocaine had been used, the operation had been done as well as under general anesthesia. In one of the cases the injury had followed a dive in shallow water, and in the other an acrobat had dived off the shoulders of another acrobat. The lesions had been about the same in each case, and because of the situation of the lesions, they had been afraid to administer a general anesthetic. When the cord was touched there was a sensation of pain, but no localization, and the operation was conducted without any more shock than with general anesthesia. He agreed with the reader of the paper that it was almost impossible to make an accurate diagnosis between cases in which the cord had been partially or completely crushed. He did not believe that a lesion through the cervical region, with an absolute loss of reflexes, positively indicated that there had been a complete destruction of

that region. Sometimes on cutting down and exposing the cord one observed very little change in the appearance of the cord until the dura had been cut. Even then there might be very little change because of a hemorrhage in the substance of the cord. The distribution of the sensation in almost all of these cases was irregular, so that the classical picture was rarely observed. In many cases where there had been absolute loss of reflexes there had been partial recovery—indeed, in his experience it had been the rule to see only partial recovery.

Dr. Graeme M. Hammond did not think it was always possible for the neurologist to say that the symptoms presented were positively indicative of complete destruction of the cord. In one case coming under his observation, in which a young man had fractured his fourth cervical vertebra by diving in shallow water, there had been evidence of complete injury to the cord. He had been operated upon a year or two afterward, but it was needless to say there had been no resultant improvement. In another case in which there had been an incomplete injury to the cord, and in which operation had been resorted to shortly afterward, there had been complete recovery and the man had returned to his occupation of wrestler. Within a few days he had seen a very interesting case. It had been first reported four years ago. Several bales had struck the patient on the back and almost immediately he had presented the symptoms of tabes, pure and simple. He had no reflexes and almost complete anesthesia with the Romberg symptom. He had been operated upon twelve weeks after the injury, and had made a complete recovery with a return of reflexes. He had seen this man within a few days, now twelve years after the injury, and he now presents absolutely no symptoms of injury to the cord. Such cases naturally led one to be rather optimistic in regard to the mild cases. The fact that there was spinal deformity meant nothing, for, in Pott's disease of the spine there was often very marked deformity without any spinal cord symptoms. If the symptoms present in a given case pointed to the total transverse lesion of the cord, there was nothing to be done but operate, and even this gave a forlorn prognosis. In the milder cases the operation should be undertaken as soon as possible, as here the prognosis was much better. He would operate in any case no matter how hopeless it seemed, because nothing else could be done, and the patient was no worse off than before. In the milder cases it was our duty to operate.

Dr. B. Sachs said that the question arising regarding operative interference in these cases was similar to the question of surgical interference in Pott's disease or in cases of tumor. The answer to this question must depend largely upon the stage. It was the fashion to delay surgical interference until everything else had been tried, whereas if surgical interference was to do any good it should be practiced at once. In cases of fracture of the spine, therefore, whether complete or incomplete, operative interference at the earliest stage could do no harm and might be productive of a great deal of good. The differential diagnosis between complete and incomplete crush was difficult. When the crush was complete the reflexes were almost invariably absent, whereas if there was more or less maintenance of conduction through the cord the reflexes were apt to be impaired or exaggerated according to the site of the lesion. The dissociation of sensation was, in his opinion, an exceedingly valuable symptom, as it pointed out the rather moderate involvement of the cord. He was

inclined to think that it was often a root symptom and not an indication of absolute involvement of the cord itself.

Dr. J. Arthur Booth said that his experience had been limited, but he had not seen any great benefit from operation, although it should be said that operative interference had been resorted to at a late stage. It seemed rational to treat fractures of the vertebra on the same general surgical principles as fractures in other parts of the body. In two of his cases the complete paraplegia existing prior to operation had remained unaffected, though there had been some diminution of anesthesia and improvement in the condition of the bladder.

Dr. Joseph Fraenkel referred to a case at the Montefiore Hospital of fracture of the spine. The patient had been admitted a year and a half after the accident, and had been walking around since the injury. Although the operation had been done late it was worthy of note that three years and a half after the injury the autopsy showed that the cord had not been entirely destroyed. About six years ago he had presented to this Society a paper on the differential diagnosis between complete and partial destruction of the cord. In four cases in which the reflexes had been lost the autopsy had shown complete destruction in only one of the cases. That shock alone was sufficient to destroy the reflexes was an old physiological dogma. He wished to insist that it was important to note the condition of the deep and superficial reflexes, because for the maintenance of the deep reflexes it was necessary that the cord be intact, whereas this was not requisite for the superficial reflexes. The plantar reflex was the one that was not destroyed.

Dr. George E. Brewer said that there was a greater inclination in Boston than in New York for operating upon these cases. He had personally passed through various stages of opinion regarding operating on these cases. At first he had been influenced by those around him in Boston. The general rule had been when there was paralysis below the point of injury and involvement of the sphincters to do an exploratory operation. He could not recall a single one of these cases that had been benefitted by the operation, though he felt that they had all been examples of complete crush of the cord. In New York City the surgeons had been perhaps a little too conservative. Injury in these cases is either a crushing one or there is a hemorrhage within or without the cord; hence the outlook from operation is not good. The cases of hematomyelia recover without operation; cases of severe crushing injury, even with operation, do not. This seemed to be the prevailing view here at the present time. Possibly some of the early successes were in cases of unrecognized hematomyelia, in which, of course, recovery would have taken place entirely independently of the operation. Last winter he had seen a girl with injury of the last lumbar vertebra. There was a sensory paralysis and complete loss of control of the bladder and rectum. Dr. Hammond had examined the case, and believing that there was no transverse lesion, had urged operation. The speaker had performed laminectomy, and had found only a small spicule of the bone. The patient had recovered from the operation, and at the end of six weeks had regained control of the bladder and rectum. When seen two or three months after the operation she had almost completely recovered. Had it not been for the advice of Dr. Hammond he would have looked upon this case as an improper one for operation. It had been his practice to introduce in these cases a very small rubber drain.

Dr. A. C. Brush, of Brooklyn, said that he had seen quite a

number of these cases. In the past six months he had had several X-ray photographs made, and they had been so variously interpreted by those who had seen them that they had ceased to have any value. A case was mentioned in which great improvement had followed the removal of a spicule of bone in a man brought into the Kings County Hospital after a fall. A diagnosis had been made of fracture of the arch. An immediate operation had been done, and the arch found to be broken down, but this was not pressing upon the cord, but a fragment of the tenth dorsal vertebra. This case had impressed him with the value of operative interference as a means of diagnosis.

Dr. Joseph Collins said that he had only seen a few cases of fracture of the spine, and these at a remote date from the injury. The future of spinal surgery for broken back, he affirmed, lay entirely in the hands of the neurologists—in other words, upon the diagnosis. This had been clearly brought out in the cases cited by some of the speakers this evening.

Dr. Walton, in closing, said that the statement made by Dr. Dana regarding the symptomatology of complete crush of the cord seemed to impeach the observation of a number of trustworthy observers. Regarding late operations he would say that if the pressure had been removed there was no use in operating, and if the pressure had existed for many months there was little prospect of doing any good by operating. Theoretically the late operation would be useful in cases in which symptoms arose from the formation of callus on the inside of the laminae and its pressure on the cord, but his personal experience did not include any case of this kind. Instead of picking out an occasional case for operation he would advise picking out an occasional case in which an operation should not be done—in other words, a case in which shock was great and the patient was practically moribund.

PHILADELPHIA NEUROLOGICAL SOCIETY.

October 22, 1901.

The President, Dr. James Tyson, in the chair.

Dr. John K. Mitchell showed a book from which one of his patients had cut out the figure three or multiples of three wherever he could find them.

Dr. F. X. Dercum stated that Dr. Mitchell's case was evidently one which was to be classified with the neurasthenic or neurasthenic-neuropathic insanities. Similar obsessions to those presented by Dr. Mitchell's patient are met with among the so-called "counters" and "mathematicians" who manifest irresistible enumeration, and have been described by Régis, Legrand du Saule and others.

Dr. Wm. Pickett read a study of paresis occurring in 149 cases at the Philadelphia Hospital.

Dr. Charles K. Mills said he did not think that Dr. Pickett had fully maintained by his statistics one or two of the points discussed. With regard to the demented type of general paresis, for instance, Dr. Mills was not entirely satisfied that the cases classed by Dr. Pickett as instances of general paresis were always true examples of this disease, as his crucial tests were not closely applied in making his differentiation. He gave for instance a little more than fifty per cent. of cases in which pupillary phenomena were present, but he failed to show how many of the cases constituting this percentage were included in his list of patients of the demented type, that is, cases without the classical delusions and usual course. Dr. Mills further said that it was well known that he (Dr. Mills) was a believer in the syphilitic origin of general paresis in perhaps eighty-five per cent. to ninety per cent. of the cases. He believed, however, that hospital statistics were of little value in determining this fact. His own conviction had come not only from a study of the literature of those who believed in the syphilitic origin of the disease, but especially from his experience of nearly a quarter of a century in private practice. It was much easier to get reliable statistics as to the existence of syphilis in the previous history of paretics in private practice than in hospital or dispensary work.

Dr. F. X. Dercum said he had occasionally employed the term "quiet cases of paresis" in his lectures, though in his published writings he had used the expression of "simple demented form" of paresis. All of the forms of paresis are demented, and when we speak of "simple demented form" we mean, of course, those cases in which the expansive or depressive delusions are absent. The number of the simple demented cases Dr. Dercum was convinced was quite large. He thought it was doubtful, however, whether it was as large as the statements of Dr. Pickett or Dr. Mendel would indicate. We should remember that many cases which are confined in the asylums have passed through expansive or depressive periods, short perhaps in duration, and of which periods there is no history or a very inadequate one. In studying paresis we should also bear in mind the occurrence of that interesting though rare form, circular paresis, of which Dr. Dercum had seen one example. In this patient cycle after cycle of de-

pression and expansion followed in succession, until finally a simple dementia was established.

Dr. Dercum did not believe that there is any relationship between epilepsy and paresis. It is not surprising that paresis may occur in an epileptic, just as paresis may supervene in patients already suffering from other organic or visceral diseases. The fact that history of epilepsy followed by paresis is so rare is of sufficient significance.

He also believed that the term alcoholic paresis is intrinsically incorrect. There is not any direct causal relation between paresis and alcoholism. Paresis is a disease which bears definite relations to syphilis, not to alcoholism. Alcoholic dementia is one thing, paresis is another. Further, almost all, if not all, male paretics drink to excess during the earlier period of their disease. It is not surprising, therefore, that we should find occasionally elements present in the delusions which suggest alcoholism, such as the delusion of marital infidelity. However, the physical stigmata of paresis are unmistakable, and the rarity of alcoholic elements in the mental phenomena is again significant of the unimportant rôle played by alcohol.

In regard to idiopathic confusional insanity Dr. Dercum went further than to make the statement that it is rare. He believed that it does not exist.

In regard to heredity he may have been misunderstood by Dr. Pickett. He did not believe that paresis as paresis is hereditary. He did believe, however, that inherited neuropathies are of great importance in rendering the patient vulnerable to paresis.

Dr. Alfred Gordon thought that Dr. Pickett's paper would have been more complete if Dr. Pickett had added to his exhaustive study the question of the influence of hereditary syphilis in paresis. In the *Archives de Neurologie*, June, 1901, Régis published his fifth case of juvenile paresis occurring in a patient with a clear history of hereditary syphilis. The patient was a young man of twenty-three years, whose parents were distinctly syphilitic. Until twenty years of age he had been considered very intelligent, but at that period he became mentally incapacitated and gradually developed paresis. This case corroborates the general opinion that juvenile paresis takes generally a demented form.

In reference to pupillary changes Dr. Gordon wished to state that several years ago he made a comparative study of pupillary changes in all forms of insanity and paresis. The striking results obtained were those concerning paresis. While in other forms of insanity Dr. Gordon found very frequently pupillary inequalities there was rarely myosis or mydriasis. In paresis, on the contrary, pupillary inequalities were almost always associated with myosis or mydriasis of one or both eyes. Whether this observation can be of some aid for diagnostic purposes he did not know, but it deserves mention for future investigations.

A Case of Multiple Lesions of the Spinal Cord and Cranial Nerves, with Amyotrophy, Probably due to Syphilitic Infection.—Dr. Max H. Rochroch and Dr. Alfred Gordon read a paper with the above title.

Supraorbital Reflex.—Dr. Joseph Sailer read a paper on the supra-orbital reflex.

Tumor of the Frontal Lobe.—Drs. F. X. Dercum and W. W. Keen reported two cases of tumor of the frontal lobe.

Dr. Charles K. Mills said that it appeared that the osteoplastic flap in both of these cases had been made so as to uncover the motor region, the posterior line of the opening being at a position some distance back of the central fissure. It seemed to him that in both of these cases the posterior limits of the opening should have been the central fissure, as the localizing symptoms clearly pointed to the prefrontal region. Motor agraphia or orthographia was present in the former, with special psychical symptoms, and no persisting paralysis of any sort. The tumor was an enucleable one, and therefore the changing condition of motor agraphia was to be explained by the fact that the symptom was due more to pressure on, than to destruction of, the motor agraphic region. In the second case the symptoms were chiefly psychical. A tendency seemed to be exhibited to confine operations to uncovering the motor area if the study of the cases presented motor symptoms of any sort. We should by this time have reached a more advanced position in our efforts at localization. We can at least map out five distinct areas on the lateral convexity of the hemisphere for osteoplastic operations, namely: (1) an area whose posterior limit is the central fissure; (2) an area whose anterior limit is the central fissure or point just anterior to this fissure; (3) an area which uncovers the angular convolution; (4) an area which uncovers the occipital lobe; and (5) an area which uncovers the posterior extremities of the first and second temporal convolutions and adjoining region. In the absence of astereognosis and persisting motor symptoms the clinical phenomena present in both of these cases pointed unmistakably to the region in front of the central fissure. Why, therefore, trephine for one or two inches posterior to this fissure, necessitating in the end an unusually large opening, rongeur, and therefore loss of time?

Periscope.

Rivista di Patologia Nervosa e Mentale.

(Vol. vi, fasc. iii, Nov., 1901.)

1. The Telencephalon of the Scylli. E. CRISA FULLI.
2. Mental and Nervous Changes from Hepatic Intoxication. G. CATOLA.
3. New Toxic and Therapeutic Properties of the Blood Serum of Epileptics, and their Practical Application. C. CENI.

1. *The Telencephalon of the Dog Fish.*—In a lengthy and scholarly paper, the author gives the results of his investigations as to the anatomico-functional value of the forebrain of the Scyllium.

2. *Changes from Hepatic Intoxication.*—Prior to 1860 pathologists had not considered hepatic disturbances as an etiological factor in the production of diseases of the central nervous system. About that time, Brown-Séquard, Teissier and others advanced the theory that certain nervous diseases might depend directly upon toxic substances retained in the blood, as in diseases of the liver. Up to this time the hypothesis has rested solely upon clinical observation. The author, however, reports a case exhibiting symptoms of ataxia, with intermittent periods of mental excitation and delirium alternating, at times, with somnolence or coma, in which autopsy showed cirrhosis of the liver with fatty degeneration of its cells. Under the microscope, multiple lesions of the nervous system were observed, notably an interruption in the continuity of the parenchyma of the cerebral cortex. To this condition, embracing distention of the perivascular and pericellular sheaths, congestion of the blood vessels, lesions of the vessel walls, etc., Levi has given the name of histological cerebral edema. The author further observed fragmentation and diffusion of the chromatic cellular substance and degeneration of the pyramidal fibers; lesions which may undoubtedly be attributed to a toxic agent; the whole symptom-complex suggesting auto-intoxication. The variation and intermission in the psychical manifestations are thought to depend upon increase or diminution in the quantity of the toxic substances circulating in the blood.

3. *Toxic and Therapeutic Properties of the Blood Serum of Epileptics.*—Acting upon the theory that epilepsy is due to toxins circulating in the system, C. Ceni has sought to produce immunity by artificially increasing the toxine elaborated in the organism, with progressive injections of serum from epileptic blood. For this purpose he used two methods: (1) injection in an epileptic of repeated and progressive doses of the blood serum of another epileptic; (2) reinjection in an epileptic of blood serum previously extracted from his own organism; this also in repeated and increasing doses. When this latter method was used, it was considered advantageous to allow several days to elapse between the extraction of the blood and its injection, in order that the normal equilibrium of the circulation might be re-established, thus producing by each method an actual increase in the toxine. The results in ten cases which were under observation for nearly two years, are given. Good results were obtained in

eight cases, of which five were treated by the first method, three by the second. Both methods were alike advantageous. The most noticeable effect in these cases was a marked improvement in the general nutrition with decrease or final subsidence of motor as well as psychic and psycho-sensorial manifestations. In three of these patients, epileptic seizures returned, after six to seven months' suspension of injections, but never with the previous severity. The two unsuccessful cases were subjects of congenito-hereditary epilepsy; and these not only showed no signs of improvement, but exhibited a slow and progressive increase of the epileptic symptoms, with evidence of a grave general intoxication, which condition ceased only with suspension of the injections. In explanation of the contradictory results in the last two cases, the author advances the tentative theory that the cellular elements concerned in epileptic manifestations may react to the stimulus of the injections either physiologically or pathologically, the latter action depending upon some unknown condition of the organism.

FIELDING.

The Journal of Mental Science.

(Vol. 47, October, 1901.)

1. Presidential Address delivered at the Sixtieth Annual Meeting of the Medico-Psychological Association. By OSCAR WOODS.
2. The Working of the Inebriates Act. By JOHN CARSWELL.
3. Phthisis and Insanity in Ireland. By THOMAS DRAPES.
4. The Evolution of the Color Sense. By F. W. E. GREEN.
5. The Superannuation Question: its Effect on Asylum Officials, with Suggestions for Further Legislation on the Matter. By EDWARD O'NEILL.
6. Recent Lunacy Legislation: Retrogression or Progress? By WILLIAM GRAHAM.
7. On the Favorable Results of Transference of Insane Patients from One Asylum to Another. By A. R. URQUHART.
8. Suprarenal Extract in the Treatment of Mental Disease. By W. R. DAWSON.
9. The Care of the Insane in Asylums during the Night. By JOHN KEAY.
10. Physical and Moral Insensibility in the Criminal. By W. NORWOOD EAST.

1. *Presidential Address.*—Takes up the subject of general statistics. The transmission of insanity by inheritance; value of early treatment; difficulties of dealing with premonitory symptoms. He spoke of phthisis infection and the extension of pathological work.

2. *The Working of the Inebriates Act.*—The author shows that as far as the inebriates act is concerned for Scotland that it has accomplished but little service.

3. *Phthisis and Insanity.*—The author here attempts to advance the question whether there is any special connection between insanity and phthisis and comes to the conclusion that as far as the relative mortality from phthisis among young adults is concerned similar figures are to be found outside of asylums as well as inside. As far as elderly patients in asylums are concerned, the results of his inquiry would seem to show that such are more liable to die from phthisis than the population at large. This high relative mortality from

phthisis in asylum populations is due not to any predisposing influence of insanity, but to the conditions of asylum life. He believes there is no such thing as a "phthisis of insanity," but that there is a "phthisis of asylums."

4. *Evolution of Color Sense.*—A short note with no data.

5. *Superannuation Question.*—This paper deals very effectively with one of the constantly recurring questions of executive control incident to asylum life. The views held by the various English Commissions on Lunacy with regard to pension schemes for old employees in asylum service are very fully gone into, and the paper is well worth studying from the economic standpoint.

6. *Recent Lunacy Legislation.*—The author calls attention to the fact that of recent years there is a tendency to cut down expense in the treatment of the insane, and contributes some excellent ideas to the question that is now exercising the minds of many students of the housing of the insane. It has become of recent years popular to advocate the founding of auxiliary institutions in which the chronic and presumably incurable patients may be housed at much less expense, and the acute and presumably more hopeful cases taken better care of. The author is not fond of the theory that there is a line of demarcation between the institution for curable patients and an institution for incurable ones. He criticizes strongly the new Irish County Council schemes and in view of similar proposals finding a place in the councils of this country, the paper is well worth serious study.

7. *Transference of Insane.*—The author brings out that the occasional sending of one patient from one asylum to another is often attended with beneficial results, an idea which has long been recognized, but is here presented in a short note with statistical evidence.

8. *Suprarenal Extract in Mental Disease.*—Histories of seven patients are here recorded in which the suprarenal extract has been employed. The main results obtained as far as insanity is concerned are that suprarenal seems to be of little benefit in cases of melancholia and especially where there is much stupor. The cases which seem to give the best results are those of acute mania of fairly recent origin when uncomplicated by stupor. The work is very superficial and the references very meager, only two references being made to the work in this country, whereas scores of cases have been reported.

9. *The Care of the Insane at Night.*—The author presents a critique of the systems in vogue in Scotland regarding the general supervision of night nursing; it is of interest from an executive point of view.

10. *Physical and Moral Insensibility in the Criminal.*—These observations, carried out at H. M. Convict Prison, Portland, were undertaken to ascertain whether the moral insensibility of the criminal, which is so prominent a psychical characteristic, had any physical parallel. Over one hundred convicts were examined as to the proficiency of their special senses. The standards to which these were compared were obtained from examinations of ten senior medical men of Guy's Hospital (a very insufficient number). The author draws the following rather broad deductions from very meager data: (1) The normal individual has more acute moral and physical sensibility than the criminal; (2) considered as classes, the accidental, occasional, and professional criminal represent three degrees of moral insensibility; (3) considered as classes, the accidental, occasional, and professional criminal represent three degrees of physical insensibility;

(4) the difference between the moral insensibility of the accidental and occasional is greater than that between the occasional and professional; (5) the difference between the physical insensibility of the accidental and occasional is less than that between the occasional and professional; (6) the parallel between the physical and moral insensibility of the three classes, although definite, is not exact; (7) the influence of education on moral or physical insensibility appears to be unimportant; (8) crimes against the person, commonly passion crimes, have least moral and physical insensibility; (9) crimes against distant property, commonly intellect crimes, have more moral than physical insensibility; (10) crimes against near property, sexual crimes, have still more moral than physical insensibility; (11) the influence of age on moral and physical insensibility is negative; (12) sensation is impaired in the criminal,—that is, the number of conscious elements are less than in the normal human adult; that is the number of perceptions possible to the criminal are less, and so the ideas of the criminal as less than in the mind of the normal human adult. A mind lacking in ideas is a mind presenting some enfeeblement; the evidence of this enfeeblement is commonly expressed in the criminal by deficient moral sensibility. JELLIFFE.

La Nouvelle Iconographie de la Salpêtrière.

May, June, 1901.

1. Cerebral Tumor (Histologic and Pathogenetic Study). ERNEST DUPRE and A. DEVAUX.
2. Dermographism in Epileptics with Intestinal Parasites. M. LANNONIS.
3. Venous Naevi and Hysteria. CH. BINET-SANGLE and LEON VANNIER.
4. Delirium Produced by Mental Introspection. VASCHIDE and VURPAS.
5. The Deformities of the Central Nervous System in Spinal Bifida. SOLOVITZOFF.
6. Contribution to the Study of Hypertrichosis as an Anatomical Element of Degeneration. LUCIEN MAYET.
7. A "Possessed" of Reubens. The Transfiguration of the Museum of Nancy. JEAN HEITZ.

1. *Cerebral Tumor*.—The purpose of this detailed study is as follows: To present some considerations upon the histopathology of meningeal endothelioma of the brain and to propose a new hypothesis to explain the physiology of the symptoms due to it. This hypothesis is not to replace those already advanced, but is to take a position among them. Clinical summary: Syndrome of cerebral tumor, headache, vertigo and vomiting, amnesia and dulness, progressive amblyopia and amaurosis from papillary atrophy, then epilepsy and slight local paresis, finally dementia, coma, and death. Autopsy: Voluminous spheroidal tumor, circumscribed, of the size of an orange, situated at the base of the left hemisphere and pressing against the orbital lobe, the insula, and the temporal pole. Histology: Arachnoidean endothelioma, concentric, with vascular spaces and angiomatous structure without calcification. Intense neuroglial sclerosis of the optic nerves. Slight diffuse cortical cellular lesions. In discussing the pathogenesis of this case, the writer first acknowledges that the intracranial circulatory disturbances and the increase of pressure can

account for the headache, vertigo, the papillary disturbances and blindness. These are mechanical agencies. Equally important with these is another factor which is of a toxic character. This is the impregnation of the cerebral substance with the products of malassimilation. The cellular toxins come from the neoplasm and are injected into the venous and lymphatic circulation of the brain. In other words, there is an intoxication of the cerebral substance by the cellular poisons of neoplastic origin. This is the new factor before alluded to. In support of this assumption, analogous symptoms produced by other toxic diseases upon the brain are noted by the author, such as uremia and diabetes. The amblyopia, headache, vertigo, vomiting, the psychical symptoms, mental enfeeblement, epileptic crises, local pareses, and coma, are autotoxic in origin and are found likewise among the symptoms of cerebral origin which are produced by uremia and diabetes. The following conclusions are quoted by the author: (1) Patients with cerebral tumor present, in addition to the depression and to the diminution of intelligence, a peculiar mental state which constitutes the dominant psychopathic condition. This is a state of torpor, of psychical confusion, and of intellectual dulness to which may be added a state of mental decay; (2) meningeal endothelioma can present in addition to the calcareous degeneration, another degenerative process, consisting of an infiltration with a material which stains deeply with eosin, and causes cell retraction. This is a form of hyaline degeneration. It is not limited to meningeal endotheliomata, but is found in the paccionian granulations and in the meningeal false membranes. It shows always a predilection for the peri- and paravascular zones; (3) The cortical cell lesions are the following: Cellular atrophy in the convolutions, a result of direct compression. In the convolutions indirectly compressed swelling of the cells with peripheral chromatolysis and eccentric position of the nucleus; (4) in the pathogenesis of cerebral tumors, in addition to the encephalic compression which, without doubt, plays an important rôle, it is necessary to give an important place to the action of the toxic products secreted by the new growth. These act upon the nervous elements. In favor of this hypothesis are certain histopathologic facts (alterations of the cortical cells and of the optic nerves, comparable to toxic infectious diseases), and anatomic facts (the widely extended lymphatic and blood communications of the neoplasm with the brain, which permit an impregnation of the cerebral tissue with the toxins which emanate from the pathologic focus), and finally clinical facts (analogy in clinical symptoms between cerebral tumors and the toxic encephalopathies such as uremia, diabetes and lead poisoning). The encephalic intoxication should thus take its place among the pathological factors (compression, irritation, vascular phenomena) which are invoked to explain the symptoms produced by cerebral tumors.

2. *Dermographism in Epileptics.*—The cutaneous manifestations of epilepsy are not rare, but usually they are only of secondary interest. Most often they result from drugs, and the most usual form is a bromide eruption. Vasomotor disturbances are sometimes met with of the most varied kind. Dermographism is among the most common, and Féré has noted it as among the less important signs of epilepsy. These two cases are noted by the author. (1) Oxyuria since infancy. Urticaria and the dermographism since the age of thirteen. Beginning of epilepsy at age of twenty-four. (2) Epilepsy beginning at age of eleven. Hereditary epileptic history. Taenia at twenty years. Epileptiform attacks twenty-one years. Dermograph-

ism, very well marked. The article is illustrated by photographs which show the skin lesions very well.

3. *Venous Nevus and Hysteria*.—An account of a venous-nevus and hysteria, in a male, in whom various signs of degeneracy were found, among which were a diminution of the number and an alteration (hyperamœbism) of the neurones. The complexity of the reasoning, by which the author attempts to prove the rôle of amœbism of the neurones in the causation of this case renders an abstract impossible.

4. *Delirium due to Mental Introspection*.—Résumé of case: Woman aged forty-three years; since her youth she has been tormented by doubts and scruples. Exaggerated emotivity, with a tendency to self-analysis. She scrutinizes to the last detail her own states of conscience, questioning herself upon the moral value of her actions and thought thus doubting her sincerity. She accuses herself of imaginary faults. Incapable of understanding the conditions of association and the causes which underlie the perception of different mental acts, which impose themselves against her will upon her conscience, she asks herself if she is the tool of her imagination and her hypothesis, or, if some external force directs her thoughts. At times she is hypnotized, at other times she hypnotizes herself. As a result, ideas of auto-accusation. Probable hallucinations. A careful psychological study of the case, of which the above is a brief description, is given in this paper. The conclusion which the author states is that to live without studying oneself is the normal condition, and that introspection is usually destructive to the best activity of mental well-being.

5. *Deformities of Central Nervous System and Spinal Bifida*.—This is a very complete study based upon four cases of spina bifida and illustrated by numerous microphotographs and plates. The carefully detailed account of the author's findings does not permit of a brief abstract, but the following conclusions are a general summary of the author's results: (1) Spina bifida is sometimes accompanied by hydrops of the fourth ventricle, which carries with it an elongation of the fourth ventricle in the direction of the base; (2) hydrops of the fourth ventricle can cause a dislocation of the whole bulb in a direction towards the base; (3) Sometimes the bulb is displaced especially in its posterior part by the hydrops of the fourth ventricle and becomes suspended upon the spinal cord; (4) by the dislocation of the posterior part of the bulb it becomes divided into two halves, an anterior and a posterior half. Each one of these develops separately as far as the region where they become fused together, that is at the crossing of the sensory fibers.

6. *Hypertrichosis as a Sign of Degeneration*.—A description of a case of hypertrichosis in the lumbo-sacral region illustrated by photographs. The author believes that this is a sign of degeneration, and in this case it is one of many other evidences of this condition. Attention is called to the coexistence of hypertrichosis with a false spina bifida, and in this way it may become of considerable diagnostic importance. As to the pathogenesis, or rather the mechanism of the production of dorsal, sacral, or lumbar hypertrichosis, the author has little positive information to give. It is to be noted that this anomaly is only an exaggeration of the normal growth of hair which acquires the most marked development along the vertebral column, and especially at the level of the lumbar and sacral region. A very complete bibliography is included in this article.

SCHWAB.

Jahrbücher f. Psychiatrie u. Neurologie.

Vol. 20, Nos. 2 and 3, 1901.

1. The Cranial Mechanism of Motility. M. PROBST.
2. Delusions of Jealousy in Women. A. SCHULLER.
3. A Contribution to the Knowledge of the Sagittal and Callosal Fibers of the Occipital Lobe. M. PROBST.
4. On Juvenile Tabes, with Remarks on Symptomatic Migraine. H. V. HALBAN.

1. *Cranial Mechanism of Motility.*—Unsuitable for abstracting on account of length and variety of experimental data.

2. *Delusions of Jealousy in Women.*—In this paper an attempt is made to present a clinical picture of delusions of jealousy in women, based upon the study of several typical cases from Krafft-Ebing's ward. The etiological importance of two periods in the sexual life of women is especially emphasized, the climacterium and the puerperium. Marcel was the first to call attention to delusions of jealousy as a clinical entity and to its frequency in chronic alcoholism. As a primary mental affection, it is found most often in men. In women the secondary (symptomatic) form is more common. Uterine affections, menstruation, hysteria, and climacterium are favorable factors for its development. Delusions of jealousy were found in the following cases: Paranoia persecutoria. The delusion of marital infidelity dominated the clinical picture of delusions of persecution; climacteria paranoia in the form of delusions of jealousy; lactation psychosis; chronic alcoholism; dementia paralytica; hysteria, convulsive attacks, anxiety, hallucinations, visionary happenings, voices which announced the husband's infidelity, and homicidal and suicidal impulses; menstrual psychosis and hypochondria; climacteric neurosis with imperative ideas. The frequency of delusions of jealousy in women is shown by the fact that it occurred twenty-seven times in 1975 cases observed in this clinic. They occurred nine times in paranoia, six in acute psychoses, five in chronic alcoholism, four in degenerates, and three in dementia paralytica. As in the six acute cases of lactation psychoses, and as in four of the paranoia cases, climacteric psychoses were present, these two episodes must be recognized as giving the impulse towards the development of the delusions in question. In cases with an indefinite etiology, the relation of the menopause and lactation should always be considered. These cases have always an important medico-legal relation in questions of divorce either based upon the supposed infidelity of the husband or the wife, or upon homicidal attempts which the presence of these delusions of jealousy frequently causes.

3. *Sagittal and Callosal Fibers in the Occipital Lobe.*—A study of the relation of the fibers of the occipital lobe based upon a case of softening chiefly of its lateral surface. Unsuitable for abstract on account of the involved anatomical descriptions.

4. *Juvenile Tabes.*—Von Leyden, Marie, and others have denied that tabes dorsalis is ever found in children. Halban in this paper brings forward convincing proofs that these denials are not justified. Several cases of juvenile tabes, studied in the clinic of Krafft-Ebing, form the basis of this paper. The importance of syphilis as an etiological factor in tabes is brought out strongly by the study of juvenile forms. In the cases where syphilis is acquired at an unusually late or early age the appearance of tabetic symptoms shortly after-

wards cannot be explained by coincidence. The first case of juvenile tabes in literature was described by Henoch in 1876. From that time on numerous cases have appeared, so that juvenile tabes cannot any longer be considered as a curiosity. The author describes the following cases, of which a clinical summary is here given: Case I. Girl twenty years old, hereditary lues; mother died of progressive paralysis; father has Argyll-Robertson pupil; beginning of the disease in the sixteenth year. Optic nerve atrophy, Argyll-Robertson pupil, Westphal symptom, disturbance of sensibility on thorax, hypotonia, slight disturbance of muscular sense, lancinating pains, girdle sensation. Case II. Man, twenty-three years old; syphilis of the parents. Since the ninth year rheumatic pains; from the twentieth year disturbance in gait, Argyll-Robertson pupil, radial paralysis, disturbance of sensation on the thorax and the right plantar surface, slight Romberg. Case III. Girl, twenty-one years old; father probably has progressive paralysis. Since the thirteenth year anisokoria. Since the fifteenth year ophthalmic migraine; Argyll-Robertson pupil, sensory disturbances on trunk, Westphal symptom. The importance of syphilis in the etiology of tabes and progressive paralysis is becoming more and more recognized in spite of the objections of Virchow, Leyden, and others. It no longer satisfies the investigator to ascertain in what per cent. of cases of tabes syphilis is found, but he wishes to show that syphilis is a *conditio sine qua non*. This opinion is supported by Moebius and in this respect he goes further than Erb, who was the first in Germany to announce that syphilis was of etiological importance. In regard to the neuropathic disposition, the author believes that it is frequently impossible of proof. If this disposition is present, tabes dorsalis cannot develop unless a previous infection by syphilis has existed or unless hereditary syphilis is present.

SCHWAB.

Deutsche Zeitschrift für Nervenheilkunde.

(1901, xix Bd., 2 u. 4 Hft.)

1. The Pathological Changes Produced by Lumbar Puncture. OS-
SIPOW.
2. Disturbance of Temperature Sense in Syringomyelia. ROSENFELD.
3. The Origin of the Cervical Sympathetic in the Spinal Cord.
LAPINSKY and CASSIRER.
4. Concerning Ataxia. LENAZ.
5. Friedreich's Disease. BIRO.
6. Disturbances of Achilles Tendon, Reflex in Tabes Dorsalis and
Sciatica. BIRO.
7. Physiology and Pathology of Tendon Phenomena in the Upper
Extremities. MOHR.
8. Spinal Cord Changes in Compression by a Tumor at the Level of
the Uppermost Segments. CRIESE.
9. Acute Mercurial Polyneuritis. SPITZER.
10. Diagnosis of Acute Focal Lesions in the Oblongata and Pores.
WALLENBERG.
11. Spinal Muscular Atrophy due to Lead-poisoning, Occurring in a
Case of Infantile Poliomyelitis. VON SARBÓ.
12. Extensive Disease of the Vessels and Meninges of the Brain
and Cord in the Early Stage of Syphilis. FINKELBURG.
13. Paralysis Agitans Combined with Myxedema. Thoughts on Path-
ogenesis of Paralysis Agitans. LUNDBORG.

1. *The Pathological Changes Produced by Lumbar Puncture.* Lumbar puncture has, in several instances, proved fatal. Nevertheless, there seems to be prevalent a general feeling that it is a perfectly harmless procedure which may be employed even when the indications are not clear. Ossipow has made some experiments upon animals to determine the possible harmless effects upon the nervous system. The plan of the experiments was as follows: (1) A single puncture; (2) a series of punctures with short pauses between them (1 and two days); (3) a series of punctures with intervals of a week; (4) lumbar puncture with aspiration of the cerebrospinal fluid; (5) a control experiment. The animals (dogs were employed) were killed by division of the carotid artery under ether, and the brain and cord were immediately removed, fixed and prepared for study. It was proved that evacuation of the cerebrospinal fluid by means of puncture produced a prolonged hyperemia of the vessels of the meninges and of the brain and cord. After repeated punctures, numerous punctiform hemorrhages, especially in the grey matter of the lumbar, upper dorsal, and lower cervical segments of the spinal cord, and more rarely in the brain, are found. After aspiration, hemorrhages into the central canal are very frequent. After repeated punctures, the nerve cells show distinct changes. Although the experiments upon animals may not be directly applicable to man, they nevertheless suggest to the author several therapeutic considerations. In the first place, when large quantities of fluid are to be removed, the possibility of cerebral hemorrhage should be kept in mind. The use of the procedure should be confined to cases in which there are distinct signs of pressure which threaten the life of the patient. In sclerosis of the arteries and in aneurysm of the cerebral vessels lumbar puncture is contraindicated. It is absolutely contraindicated, also, in acute and chronic disease of the central nervous system in which there are no distinct symptoms of increased pressure on the part of the cerebrospinal fluid. The danger of the diagnostic use of lumbar puncture is much less if only small quantities of the fluid are removed. Lumbar puncture in apoplectic hemorrhage, for the purpose of determining whether the blood has entered the ventricles, is of doubtful value, as a bloody discoloration of the fluid may depend upon other causes; for instance, the injury of a vessel by the needle. Moreover, the removal of the fluid may bring about increase of the hemorrhage. Lumbar puncture with aspiration of the fluid should be entirely abandoned.

2. *Disturbance of Temperature Sense in Syringomyelia.* Rosenfeld's patient had syringomyelia of the cervical type. A peculiar feature in the case was that while the man could not distinguish between the extremely cold and hot test tubes, he could tell when he was touched with a cold or a warm hand. This anomaly might be explained upon the ground that there was in the patient a peculiar modification of theremoesthesia, by reason of which extreme temperatures were not distinguished, while temperatures approaching that of the body were properly discerned; or upon the theory that there was a local summation of temperature sense impressions. To determine whether the latter was the correct explanation, the author used coils of lead tubing, so as to cover a large surface, and passed water of different temperatures through them. When thus examined, the patient could distinguish temperature differences better than when test tubes were used. In the case of the hand, however, not alone is there a summation of impulses, but cognizance must also be taken of the fact that patients with syringomy-

elia have not lost the memory for heat and cold. The touch of the hand produced a complicated sensation: One of touch and pressure, one of more or less moisture, and one of temperature. If a patient is touched with a hand having a different temperature from his own skin surface, the sensations still preserved may suffice to awaken a recollection in the brain sufficient to identify the hand as warm or cold. The summation of impulses is an auxiliary factor.

3. *The Origin of the Cervical Sympathetic in the Spinal Cord.*—A number of experiments have been made to determine the origin of the sympathetic nerves, the most important being those of Huet and of Onuf and Collins. The former extirpated the superior cervical ganglion and studied the cervical spinal cord by the Marchi method. No special changes were found. Nissl's stain revealed degenerative changes in the anterior horn on the operated side. Onuf and Collins, after extirpating either the stellate or the semilunar ganglion from cats and studying the nervous system, concluded that the afferent fibers of the sympathetic spring, not from the spinal ganglia, but from the ganglia and plexuses of the sympathetic, and terminate in the cells of Clarke's column and in the intermediate zone. Lapinsky and Cassir removed the superior cervical ganglion from 5 animals, and the inferior from 2. The animals were killed after 2 or 3 weeks, and the cord was studied by the Marchi and the Nissl methods. The results were negative. Hence the authors conclude that the question of the origin of the sympathetic in the spinal cord is not as yet solved.

4. *Concerning Ataxia.* There are two theories of ataxia: one that the condition is due to a disturbance of the function of the central organs or of the centrifugal tracts; the other, that it depends upon disturbances of sensation. As against the latter theory, there are a number of cases on record of anesthesia without ataxia, and of ataxia without anesthesia. Sensation is necessary for the control of movements, but not for their inauguration. The author's general conclusions are that in the execution of voluntary movements 2 systems are concerned: first, the cerebrum (cortical system), with the pyramidal tracts, which convey the voluntary impulses to the muscles, and the sensory tracts, which inform us as to the position of our limbs; second, the cerebellar system, which influences the unconscious, but indispensable, synergic impulses. Diseases of the cerebral system produce, in general, paralysis; those of the cerebellar system, asthenia and ataxia.

5. *Friedreich's Ataxia.*—A report of 5 cases of Friedreich's ataxia, with a review of the literature, together with a lengthy but valuable table of differential diagnosis.

6. *Disturbances of the Achilles Tendon-reflex in Tabes Dorsalis and Sciatica.*—Biro, in a study of the Achilles tendon-reflex, finds that in tabes dorsalis it may, in the beginning, be absent on one side, and, later, disappear on both sides. Its absence in healthy persons is very doubtful. Biro does not think it probable that in health a tendon-reflex is ever absent from birth, in any one extremity. In many cases of disease of the sciatic nerve the Achilles tendon-reflex is absent on the affected side. In no case was there such a disturbance in a healthy extremity. In several instances the reflex was diminished in the beginning, disappeared later, gradually returned during convalescence, and was entirely restored after complete cure. The reflex is dependent upon the sciatic nerve. The disturbance of the reflex

in so-called sciatica is strongly in favor of the view that this affection is not a neuralgia, but depends upon a distinct anatomic lesion.

7. *The Physiology and Pathology of the Tendon-reflexes of the Upper Extremities.*—Mohr's conclusions are as follows: (1) The tendon-reflexes in the upper extremities are inconstant; the triceps reflex is absent in 33 per cent. of healthy persons; the supinator reflex in 13 per cent. (2) The absence of these reflexes in diseases of the nervous system is not directly applicable in diagnosis. (3) In tabes dorsalis these reflexes are absent in about the same proportion as in health. (4) Only the presence of the reflexes in normal or increased intensity can be of diagnostic value. (5) In the presence of exaggerated reflexes, the diagnosis between organic disease and functional disturbance can be made by a study of the muscle tenus, which is increased in the former, and manifests itself, in its earlier stages, during quick passive supination and quick extension of the flexed forearm.

8. *Spinal Changes following Compression by a Tumor at the Level of the Uppermost Segment of the Cord.*—The tumor was of (the size of a walnut, and had grown between the dura and the bone, occluding the foramen magnum on the right side, and leaving only a small space for the oblongata on the left. The lowest part of the oblongata and the cervical segments down to the lower border of the third were compressed. The cord was reduced to a thickness of from 3 to 4 mm, at the point of the greatest compression. A curious feature was that the interior portions of the cord suffered more than the periphery; this seems to be the rule in compression of the cord, although there is no satisfactory explanation for it. The interior columns were generally preserved. All gradations between slight degeneration of the nerve-fibers and complete disappearance of all nerve elements could be traced. Actual softening was not present, and the consistency of the affected parts did not differ materially from that of other portions of the cord; microscopically, the signs of edema and swelling were less marked than those of secondary sclerosis. The presence of round cells in large numbers and of newly-formed blood vessels indicated the co-existence of inflammatory processes. Secondary degeneration was present in the posterior columns, but the comma tract could not be traced for more than 3 segments (the Marchi method was employed). It is still undecided whether all the fibers of this tract are of the same nature and have the same origin. Schultze assumes that they are composed of descending fibers of the posterior roots, while Tooth ascribes to them an endogenous origin. Ziehen believes that both views may be correct. In the present author's case, the degeneration was observed on but one side, although the posterior horns of both sides were involved. If it is assumed that the fibers come from the posterior roots, the unilateral degeneration can be more easily explained, as the left posterior portion of the cord was more degenerated than the right. The oval field of Flechsig was not degenerated.

9. *Acute Mercurial Polyneuritis.*—A syphilitic patient of 28, suffering from a recent maculopapular syphiloderm, after receiving twenty-two inunctions of gray ointment, developed pain, tenderness and ataxia of the lower limbs. The pupils, bladder and rectum were normal. The tendon-reflexes were exaggerated. Romberg's symptom was present; mentality was good. Spitzer considers the case one of neuritis of the motor nerves, and bases the view that it was due to the mercury and not to the syphilis

upon the fact that when mercurial treatment was suspended the neuritis promptly disappeared, although the syphilitic manifestations of the skin continued and increased. During the period of the neuritis, the urine contained mercury. Interesting, of course, is the exaggeration of the patellar reflex and the ankle clonus. The author does not think that this feature is necessarily indicative of spinal involvement, and believes that it can be present with a peripheral neuritis.

10. *A Clinical Contribution to the Diagnosis of Acute Focal Lesions in the Oblongata and the Pons.*—The cases here reported illustrate a diagnostic acumen on the part of the author that is truly astounding. There were no autopsies in any of the cases, but the reasoning is so logical that the diagnosis may be accepted. Case I is that of a woman of 55, with marked arteriosclerosis. After an apoplectiform attack without loss of consciousness, there appeared difficulty in swallowing, vertigo, and sensory disturbances in the right half of the face and in the left leg. The subjective symptoms were (a) vertigo, with a tendency to fall, first to the right, and later to the left side; (b) a sensation of cold on the right temple; (c) disturbance of deglutition, which later disappeared. The objective symptoms were: (a) disturbance of sensation in the distribution of the two upper roots of the right trigeminus; (b) sensory disturbances, chiefly of cold and pain, on the left side of the body, from the scapula and mamma downward, varying in intensity, and occasionally extending to the upper extremity; (c) vasomotor disturbances on the right half of the nose; (d) diminution of the right corneal reflex; (e) constant paralysis of the right vocal cord; (f) ataxia of the right extremities; (g) diminution of the right knee-jerk, varying in intensity; finally exaggeration. The diagnosis of the author was thrombosis of the right posterior inferior cerebellar artery. Case II was a man of 61, who, after very severe exertion, experienced weakness and tingling in the left foot followed by vertigo, paralysis of deglutition, cough, dysarthria, disturbance of sensation on the right side of the face and left side of the body (exclusive of the face), a tendency to fall to the right and paresis of the left leg. The diagnosis was thrombosis of the right vertebral artery, beginning at the point of origin of the right posterior inferior cerebellar artery. Case III, a man of 48, with a history of syphilis and old otitis media, was seized, without disturbance of consciousness, with vertigo and vomiting. The persisting symptoms were vertigo and vomiting, a tendency to fall to the left, ataxia of the left limbs, absence of the patellar, cremasteric and abdominal reflexes, paresis of conjugate deviation to the left—particularly of the left abducens—marked horizontal nystagmus when looking to the left, and rotary nystagmus when looking to the right; deafness in the left ear, with shortening of bone conduction, and a negative Weber test. The lesion was placed in the left restiform body, at the entrance of the auditory nerve. Case IV, a man of 70, with marked arteriosclerosis, after an apoplectiform attack with paresthesia of the nose, tinnitus in the right ear, and unconsciousness; had the following symptoms: Vertigo, a right-sided corneal scar in consequence of keratitis, sensory disturbance of both trifacial nerves, paresis of the muscles of mastication on the right side, total paralysis of the right abducens and of the right facial, partial labyrinthine deafness on the right side, hyperesthesia for pain and less for temperature sense on the left side of the chest, neck and shoulder; and slight exaggeration of the tendon reflexes of the left leg and of the left musculospiral reflex. The diagnosis was hemorrhage from the central branch of the artery going to the right facial

nucleus in the right half of the pons, between the sensory fifth nucleus, the trapezium, and the root of the abducens. Under each case the author gives able arguments justifying the diagnosis.

11. *Spinal Muscular Atrophy following Lead Poisoning in a Case of Infantile Poliomyelitis.*—The muscular atrophy began in the patient, who was first a lead moulder and then a compositor, at the age of 20, and affected all parts except the muscles of the face, neck, and lower left leg. The atrophy commenced in the right leg, which from childhood on was shorter than the left, the result of poliomyelitis. From the age of 25, the patient also suffered from dermatitis herpetiformis.

12. *A Case of Extensive Disease of the Vessels and Meninges of the Brain and Cord in the Early Stages of Syphilis.*—The patient was a man of 43, who had a tuberculous history. Six months after infection he sustained, without loss of consciousness, a left-sided hemiplegia, which disappeared in 3 weeks. Two months later there was a severe headache, which yielded to specific treatment. Six months after the first appearance of cerebral phenomena, death occurred in an attack of right-sided hemiplegia, with symptoms of vagus paralysis. The autopsy showed a fibrinous pleurisy and lobular pneumonia; and in the brain extensive changes in the arteries and veins, in the form of periarteritic and endoarteritic, meningitic processes at the base of the brain in the neighborhood of the right frontal convolution and in the cord. Perineuritic and endoneuritic changes of the basal nerves and of the spinal roots, and softening in the lenticular nucleus and in the pons.

13. *A Case of Paralysis Agitans combined with Symptoms of Myxedema.*—Lundborg believes that myoclonus familiaris and paralysis agitans are both due to disease of the thyroid gland, and calls attention to the analogy which others have also observed, between paralysis agitans and exophthalmic goiter. He reports the case of a woman of 54, who in addition to paralysis agitans, had a number of the symptoms of myxedema. At the autopsy the thyroid gland was found small, with no middle lobe. Microscopic examination of the right lobe showed chronic interstitial changes, as well as a degeneration of the alveoli. The left lobe was the seat of cystic change. The author assumes that a thyroid so altered furnishes a pathologic secretion which is capable of producing a profound alteration in the nervous system. RIESMAN.

MISCELLANY.

THE TREATMENT OF MORPHINOMANIA. O. Jennings (Lancet, Aug. 10, 1901).

Dr. Jennings insists that the mere suppression of the habit of taking morphine such as can be assured when a patient is under restraint is no proper cure, and that unless the craving for the drug is removed the habit will of a certainty return when the patient regains his liberty and when the conditions which have led to the taking of the morphia again arise. In regard to this craving, one must differentiate, when it will be found that it occurs in two forms. Hypodermic injections of morphine seem to give energy and "go," and it is for this reason that the syringe is resorted to on the slightest pretext. It is, says Dr. Jennings, the exact equivalent of brandy nipping. Thus one form of craving is a desire for the purely stimu-

lating effect of the syringe. This can with comparative ease be got over by the exercise of some self-control, or by a moderate amount of compulsion, so long as morphine in some other form is substituted. But the craving for the morphine itself is another matter. The morphine *habitué* becomes so dependent upon the drug that, quite independently of the immediate reviving effect which results from the use of the syringe, he depends, not merely for happiness, but for bodily comfort, upon the regular ingestion of a certain daily dose of morphine, the lack of which is the cause of the miserable wretchedness that accompanies the sudden suppression of the opium habit. One must bear in mind that morphine is a stimulant, and especially a cardiac stimulant, and that not a few of the depressing effects of the sudden cessation of its use are due to the enfeebled action of the circulatory apparatus which immediately results. Hence the necessity of administering some form of cardiac tonic or stimulant while the morphine is being reduced. Again, it will be observed that the morphine *habitué* suffers greatly from "hyperacidity of the stomach and organism generally." No doubt much of the sinking and distress which these patient complain of is primarily due to this sour condition of stomach, and although the morphinomaniac will fly to morphine for the mitigation of this as of every trouble, still there are other ways of relieving it, such as by the administration of alkaline stomachics. Hence the great utility of bicarbonate of soda in the treatment of the morphine habit. In fact, in treating this condition it is not sufficient merely to cut off the drug. One must do all in one's power to remove every cause of discomfort, and to protect from every cause of distress, knowing as we do that in these patients the craving which is the source of mischief is not a mere vicious desire for an unnatural stimulation, but is often a very natural longing to take what experience has shown to be the shortest way of getting rid of distressing feelings of many kinds.

In the treatment then of a case of morphinomania the first thing to do, according to the author, is to simplify the case by stopping the use of all other stimulants—alcohol, cocaine, or whatever they may be—which the patient may be taking; and it is comparatively easy to do this, for the morphine is what the patient craves for, and he will give up everything for its sake. Having then insured that we have but one vice to deal with, the next thing is to get rid of the use of the syringe by substituting some less harmful mode of administration; and this again ought not to be inordinately difficult; the patient can be persuaded to give up his temporary joy if we will allow him the means of escaping the continual misery which deprivation, or even material diminution of his daily dose of morphine produces. Dr. Jennings strongly advises that the morphine given for this purpose should be administered by the rectum. Of course the amount given in this way will have to be larger, perhaps twice as large as that taken hypodermically. But that does not matter. The patient is weaned from the constant desire for the immediately stimulating effect of the syringe. When this is accomplished, we must gradually reduce the dose; as quickly as possible, but at the same time as slowly as is necessary to effect a cure without producing distress; and with the object of warding off this distress, we must administer cardiac tonics such as sparteine or digitalis. In some cases nitroglycerine is useful. Then, in view of the almost constant presence of hyperacidity, bicarbonate of soda should be administered; and lastly one must remember that the hot-air bath—the Turkish bath followed by massage and the cold douche—is one of the best of sedatives, and

perhaps also tends to eliminate some of the toxic material which tends to accumulate in the blood of these "acid" patients. At any rate the use of the hot-air bath is of great service not only during the process of reducing the morphine but also afterwards. It is very important that as the morphine is reduced the patient should be kept to a strictly moderate and as a general rule a non-alcoholic régime. The tendency is for these patients, as they recover, to eat too much, which again brings on hyperacidity, and this in turn leads to a renewal of the craving. To prevent this a simple life with a fair amount of exercise and the regular use of Turkish baths is to be advised. The great thing is to get rid not merely of the morphine but of the craving for it; and this cannot always be done by strength of will, by good resolutions, or even by subjection to restraint, unless attention be paid to the conditions which lead to the desire for the drug, and also to the discomforts which follow the cessation of its use.

JELLIFFE.

DIE JUVENILE FORM DER PROGRESSIVEN PARALYSE (Juvenile Form of Progressive Paralysis). J. A. Hirschl (Wiener klin. Wochenschrift, No. 21, 1901, p. 515).

During the last ten years twenty cases of juvenile parietic dementia have been observed in Krafft-Ebing's clinic. The age of twenty years is taken as the dividing line between the paresis of youth and that of adult life. Hirschl, who reports these cases, has found that in juvenile paresis hereditary syphilis and neuropathic taint are very common. In seventeen of the twenty cases hereditary syphilis was definitely shown, and in another case it was probable. Nine cases occurred in mentally deficient children. Twelve were in males and eight in females. The disease in these twenty cases began between the ages of eight and twenty years. Most of the patients had not reached puberty; as nine of the males and five of the females were sexually undeveloped. The average duration of the disease was three years and three-quarters, although two cases lasted seven years.

SPILLER.

REPORT OF A CASE OF CEREBELLAR TUMOR; DEATH; AUTOPSY. D. A. K. Steele (The Chicago Clinic, vol. xiii, No. 1).

The patient was a boy of thirteen. At the time of birth he was almost asphyxiated, being resuscitated after considerable effort. No instruments were used. At the age of four years he had malarial fever. When six years old he manifested abnormal nervousness. This passed off in about six months. When about eight or nine years old he suffered from severe epistaxis, and in his eleventh year he had what were called bilious attacks. The contents of the stomach were ejected with great violence. It was supposed that he was suffering from toxemia due to bile absorption, which caused the headaches, jaundice, nausea and vomiting. The mother noticed a slight unsteadiness in the gait, but this was not marked until he was about twelve years old. The eyes were slightly affected, so that he held his book to the left in reading, and noticed spots before his eyes; also complained of diplopia. He was confined to his bed, had very little pain, lay in a semi-comatose condition, had little or no vomiting. When he began to recover he remarked that all the days seemed dark. The sight was tested and it found that he could not count the fingers. This was after he had been ill for three or four weeks, and there was considerable bile in the blood and urine. His gait began to be more unsteady, the unsteadiness gradually in-

creasing until four weeks before he was brought under observation, when he was perfectly helpless. He had severe vomiting, preceded by nausea and markedly of the projectile variety, the matter ejected being merely mucus without bile. Often in the night or during the morning he complained of most fearful headaches, which were frequently accompanied by vomiting. The headaches were referred to the forehead, but seemed to radiate more or less over the whole head.

When he entered the hospital the gait was very unsteady, tottering and irregular, ataxic in character. His head had always been large. When examined he seemed fairly well nourished, had exaggerated ankle clonus, more marked in the left foot than in the right; coördination greatly impaired. Terrific headaches following vomiting spells; totally blind; pupils dilated; hearing nearly normal; smell impaired, but various odors recognized; taste normal; touch somewhat blunted. No appreciable nerve impairment in either auditory nerve. Double optic atrophy. Secondary congestion of veins had lessened, and they were smaller than normal while arteries were threadlike.

An X-ray photograph did not give anything definite. As the symptoms of the boy grew worse, there were involuntary evacuations from the bladder and bowel, and an increase in the severity of the headaches. Trephining was done over the right frontal lobe to relieve the intracranial pressure. As it was not considered justifiable to remove the cerebellar tumor, an opening was made about half an inch to the right of the median line, well in advance of the motor area. After exposing the brain, a needle was passed downward and backward through the brain tissue, and at the depth of about an inch it entered a free cavity. When in the free cavity fluid escaped, and it seemed that the needle had entered a cyst. The fluid was clear, saline, normal, cerebrospinal fluid. After the withdrawal of two or three ounces, the needle was taken out and brain was incised. It was found that the cyst was really a greatly distended lateral ventricle due to internal hydrocephalus. After the escape of eight or ten ounces of this fluid, the ventricle was packed with strips of iodoform gauze. The boy did well for thirty-six hours, when high temperature developed and he died.

At autopsy there was found to be a cerebellar tumor situate in the left hemisphere of the cerebellum close to the median line and pressing upon the right and middle lobes of the cerebellum. Microscopical examination showed the typical structure of a glioma, quite vascular in character.

JELLIFFE.

ZUR KENTNISS DER LEUKÄMISCHEN ERKRANKUNG DES CENTRALNERVENSYSTEMS (Leucemic Affection of the Central Nervous System). R. Spitz (Deutsche Zeitschrift für Nervenheilkunde, 1901, xix, 5 and 6, s. 467).

The author reviews the literature of nervous affections in leucemia and gives the anatomical findings in a case examined by him. The changes in the nervous system are somewhat different in acute and in chronic leucemia. In the former consisting mainly of hemorrhages and cellular aggregations (lymphomata), and in the latter of sclerotic or softened foci. The case examined by him was an acute one, that of a woman of forty-seven years, dying after an illness of about five weeks. The macroscopic changes were practically negative, but upon microscopical examination extensive lesions were revealed. These consisted in the main in multiple foci and changes in

the very fine vessels. The foci were but few in the cervical region (only this portion of the cord was severed for examination), more numerous in the pons, and again fewer toward the cortex. They were found mainly in the white matter, to a less extent in the gray matter, and varied much in size, all being too small to be plain to the naked eye. These foci consisted of aggregations of round cells mainly mononuclear, polynuclear cells being rare and eosinophiles not found. Many of the larger foci showed central necrosis and were not unlike cheesy tubercles in appearance. The nerve sheaths were not unaffected, but showed here and there degeneration, both by Marchi and by other methods. The capillaries were distended with leucocytes and the adventitia showed round celled infiltration. The nerve symptoms observed *intra vitam* were insignificant compared to the extent of the changes. This the author thinks is due to the fact that they were to some extent masked by the severe general symptoms of the disease.

He next considers briefly observations recorded by a number of other authors and compares them with his own case. Bulbar symptoms he finds most common. Chronic leucemia seems to have a special tendency to attack, the midbrain and afterbrain and the nerves arising from them, the spinal cord and its nerves being less frequently affected. The changes in acute and those in chronic leucemia differ mainly in degree, the nerve degeneration and sclerotic alterations being wanting in the former. A copious list of references is given at the end of the article.

ALLEN.

BERI-BERI. Francis Clark (British Medical Journal, 1900, May 12, p. 1,152).

The following is a résumé of the history of an outbreak of beri-beri at the Berlin Foundling House, West Point, described by the author. It is stated that the Blind Home, a one-story building, which maintains about sixteen children, and is now closed, has had cases of beri-beri among the inmates since July of last year, the first case to occur being said to have been an infant who was admitted suffering from the disease. From the records, I find, however, that only one death has occurred at the Blind Home during this period—namely, a female child four years old, whose death was registered as due to beri-beri. The children from the Blind Home attended divine worship at the Berlin Foundling House on Sundays, and a European nurse employed at the latter visited the Blind Home daily, and the authorities of the Foundling House are of the opinion that the infection must have been introduced from the Blind Home in some manner or other. The first two children to be attacked were two who were being (surgically) dressed by the above-mentioned nurse, one for an affection of the eyes, and the other for some skin affection, although I cannot gather that either of them had open wounds. Within two days, however, of these two children showing symptoms of the disease, no fewer than fifty to sixty others were attacked. Up to December 7 the House contained 102 Chinese children and girls up to 16 or 17 years of age, and on that date sixty-nine school children, all of whom were said to be suffering from beri-beri, were sent to the neighboring Portuguese colony of Macao with six big girls (who were free from the disease) to assist in looking after them, thus leaving twenty-seven healthy children in the House. These latter have remained healthy, although no change has been made in the dietary or source of food supply. Two of the children sent to Macao died shortly after arrival there, but the remainder are

reported to be improving in health. The children who were attacked were all between the ages of four and seven years, and all of them slept in a series of adjacent ground-floor rooms. These rooms are thoroughly well lit and ventilated and have close-boarded floors, which are painted but otherwise bare. Some children who slept in the ground-floor rooms in another part of the building were not attacked, nor were any of the girls who slept upstairs. No European cases have occurred. The children's dietary appears to be a most generous one, comprising rice, eggs, fish (fresh and salt on alternate days), meat (beef or pork) at every evening meal and thrice a week with the morning meal. The special points about the outbreak seem to be the unusually early age of all the patients (from four to seven years), the absence of overcrowding, and the abundant lighting and ventilation of the premises, the liberal dietary, the fact that all those attacked slept on the ground floor, and the fact that after the removal of the sick the remaining twenty-seven children have remained free from the disease, although no apparent change has been made in the dietary.

If Manson's theory is adopted it must be assumed that the infection was conveyed from the Blind Home to the Berlin Foundling House either in the clothing or in the earth adhering to the boots of the children or of the nurse who went from one establishment to the other, that it developed rapidly, and that the children sleeping in certain of the ground-floor rooms were rapidly poisoned by the toxin generated by the infective germ. The fact that the two children who required surgical dressings were the first to develop the disease suggests rather that they were thus more susceptible to the disease than that they communicated it to the others, for the interval between their attack and the outbreak among the rest of the children did not exceed two days at the most, and the author is inclined to think, therefore, that all the children derived infection from the same source.

JELLIFFE.

Book Reviews

STUDII ANATOMICI E SPERIMENTALI SULLA FISIOPATOLOGIA DELLA GIANDOLA PITUITARIA (Hypophysis cerebri). Par Dott. Arnolfo Caselli. Stefano Calderini e Figlio. Reggio nell' Emilia.

This is an interesting and complete monograph on the pituitary, the result of several years original work. The anatomy, ontogenesis, philogenesis and physiology are discussed in three opening chapters. The functional relationship of the hypophysis with other organs is taken up in a fourth, the morphological alterations occurring in man, hypophysis-therapy and hypophy-sectomy in man are the concluding chapters.

A number of interesting facts may be gleaned from this work. Speaking of the development of the hypophysis the author says that it follows the development of the rest of the encephalon, measuring the most in those with the largest brain and the least in those of small brain. The anterior lobe, with its epithelial-like structure presents many analogies with the structure of the thyroid. In the posterior lobe there are no well-marked nervous elements, those which are there found are most elementary in structure or have lost their nervous character.

Complete abolition of the function of the hypophysis produces in the first place a slowing of the respiration and an acceleration of the pulse. There is some slight diminution of the psychical functions, and a disturbance of movement characterized by over extension of the muscles and a spastic tonic-clonic contraction of the limbs without sensation, convulsions, progressive cachexia, coma and death. The cachexia is of the type of an intoxication and is probably due, as is also the diminution in psychical function, to the action in the cerebellum and spinal cord. In many respects the symptoms following extirpation of the hypophysis are similar to those of diabetes.

In animals in which partial development of the pituitary has taken place there is also a retarded development of the entire animal organism.

Many lesions and anomalies of the hypophysis may be found in man without any appreciable alteration in the general health and acromegaly is probably due to a modification of the function of the gland, often associated with its hypertrophy, although not necessarily so. Atrophy of the gland is a nearly constant accompaniment of cretinism.

The author concludes that this organ is a necessary one to the human economy and that it has a specific internal secretion, a modification of which brings about grave alterations in metabolism.

JELLIFFE.

TRAITÉ DE THERAPEUTIQUE DES MALADIES MENTALES ET NERVEUSE. Hygiène et prophylaxie. Par Paul Garnier, Médecin en Chef de l'infermerie spéciale du depot, et Paul Cololian, Ancien interne des asiles de la seine. 8vo., 496 pages, 7 francs. J. B. Baillière et fils, Paris.

There are numerous didactic treatises on nervous and mental dis-

eases but for the most part, excepting the memorable work of Collins, they devote themselves to etiology, pathology, and pass treatment by with scanty attention. It is a good sign of the times that special work on treatment should appear.

The plan of the work is very simple. After a short and yet detailed account of the historical aspects of neuroses and psychoses, a complete analysis of the construction of a modern institution for the treatment of the insane is offered and a free discussion is made of the principles of non restraint, and the open door systems.

An interesting discussion presents the necessary variations which should exist in the type of building to accommodate three types of the insane,—the ordinary insane, the criminal insane and the prison. Institutions for the treatment of alcoholics, epileptics, hysterical individuals, idiots and for degenerates are described and their needs considered. Apart from the features of the habitat for patients, rules for general diet and regimen are carefully and fully considered.

From the more strictly pharmacotherapy point of view there are exhaustive chapters on sedatives, hypnotics, narcotics, nervines, and full discussions of the various physical agencies of hydrotherapy, actinotherapy, massage and electrotherapy.

Following the general discussion of the various remedies, special chapters then consider *in extenso* the treatment of the different neuroses and psychoses. A final chapter is offered on etiology and prophylaxis. Considered from all points of view the work is an excellent one and is worthy of special commendation. JELLIFFE.

ATLAS AND EPITOME OF THE NERVOUS SYSTEM AND ITS DISEASES. By Professor Dr. Chr. Jakob, of Erlangen. From the Second Revised German Edition. Edited by Edward D. Fisher, M.D., Professor of Diseases of the Nervous System, University and Bellevue Medical College, New York. W. B. Saunders & Co., Philadelphia and London, 1901. Cloth, \$3.50 net.

In reviewing, in a former issue, this excellent manual, we pointed out its many points of practical utility. The present edition varies little from that formerly presented by another publisher, save that its style as a reflection of the publisher's art shows a distinct improvement. Better paper and more careful typographical supervision make it a more pleasing product. As a comprehensive manual of the anatomy, normal and pathological, we know of no work which gives as much material in so condensed and compact a form. It is a worthy representation of the Saunderson Hand Atlases. S.

News

ANNOUNCEMENT.

The JOURNAL OF NERVOUS AND MENTAL DISEASE for 1902 is to be conducted on much the same lines as for the past four or five years. It still remains the only monthly journal in its specialty in the English language, and during its twenty-nine years of development has enjoyed the respect and support of the practitioners of this country.

For the past ten years the JOURNAL has been most ably conducted by the late Dr. Charles Henry Brown. Through his efforts the periodical has taken its place in the front ranks of special journals and it is due to Dr. Brown's business capacity that American Neurology and Psychiatry has had such a successful and worthy organ.

Following Dr. Brown's death, the Board of Editors have expressed the desire that the JOURNAL continue its sphere of usefulness. Dr. William G. Spiller remains the Editor, Dr. L. Pearce Clark, late of Craig Colony and now, temporarily, in Vienna, will become an ASSOCIATE EDITOR, and Dr. Smith Ely Jelliffe, the former Associate Editor, becomes the managing and responsible editor.

The Board of Editors has been enlarged by the additions of Dr. William Osler, Dr. Frederick Peterson, and Dr. Wharton Sinkler.

The JOURNAL still remains the organ of the Neurological Societies which it formerly represented, and save for a slight increase in size and the change in the Managing and responsible Editor, remains as before.

Special attention is called to our Periscope department in its altered form. Here the entire field of nervous and mental diseases will be covered monthly, and our subscribers will be furnished with a résumé of what is being done in this branch of medical science the world over. The Bibliography of American Neurology, so arranged in the form of cards, permits of the making of a very valuable series of references of American workers, thus completing the résumé.

The Board of Editors and the direct Editorial Management desire the hearty support and cooperation of their fellow practitioners in their endeavor to make the JOURNAL OF NERVOUS AND MENTAL DISEASE a worthy representative of American neurological and psychiatric medicine.

Progressive Medicine.—The announcement by the Maltine Company on page I of our advertising form is worthy of special attention. They announce prizes of \$1,000 and \$500 respectively for the best essays on Preventive Medicine. The judges chosen occupy a high position in the profession.

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Original Articles.

A CASE OF MYASTHENIA GRAVIS.

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It is a conspicuous fact in the history of medical science, that following the accurate description and correlation of various symptoms observed in an individual, cases of questionable diagnosis come into alignment; and though the question of terminology is not always promptly decided, the disorder itself is properly accredited as a "new disease" presenting its symptomatic appeal to the diagnostician and therapist.

Doubtless cases of the class to be considered have been disposed of under such labels as atypical tabes, bulbar paralysis, hysteria, Landry's paralysis, and other convenient make-shifts, the use of which is not confined to the science of medicine.

Omitting for the present all useless discussion regarding propriety in nomenclature, it seems to me sufficient to state that only two names can be said to be fairly in competition for precedence.

The designation myasthenia pseudo-paralytica gravis

suggested by Jolly, and asthenic bulbar paralysis by Strümpell, are those most commonly employed in the literature on the subject; and it is merely a matter of individual preference which led me to adopt the former in this article, chiefly for the reason that it is descriptive, and is non-committal regarding the pathology of the disease which, as yet, has not been satisfactorily determined. The disorder is rare; only eighty-one cases having been recorded in this country and Europe. If I am correctly informed mine is the seventh case recorded as occurring in America.

The history of this case describes a male, twenty-three years of age; occupation, baker; habits regular; no history of syphilis or drug addiction; has been married about one year.

This is the first attack, and up to the time of the examination had continued ten months.

The evolution of the disorder has been slow; cause not assigned; family history excellent, and heredity is consequently denied. His father, who accompanied him to my office, is sturdy, well-developed, about six feet in height, and is a capital specimen of both mental and physical endowment. He is sixty years old, his wife fifty-five, and in good health both body and mind-wise. No form of mental or nervous disease or diathetic tendency was admitted as having occurred in either direct or collateral antecedents. Further inquiry into the family record discloses the fact that the patient is the sixth in respect of age in a family of sixteen children by the same parents. Eight of each sex constituted this prolific offspring and all passed safely through the diseases incident to early childhood. Four of each sex have died; not one of these living beyond the period of eight years; cause of death not given. The recurrence of the number four and its multiples may arrest the attention of those who perceive something significant—(though not scientific) in the witchery of numbers.

As the patient entered my office, I was immediately aware of the existence of double ptosis, and noticed a backward thrust of the head which I discovered was an attempt on the patient's part to overcome the effect of the oculo-motor palsy. His general appearance was neat, and, physically there was nothing to criticize aside from the condition already noted. His gait was normal and station unaffected. Ptosis being the prominent objective symptom, an investigation of the field of the cranial nerves was first instituted. In addition to the ptosis which was more marked on the right side, the ophthalm-

moplegia included the orbicular muscles, rendering complete closure of the eyes an impossibility. The reflexes concerned with light and accommodation were normal, and the pupils were neither contracted nor dilated. Upon using the ophthalmoscope, the only feature claiming attention was a deeper coloration or pigmentation of the fundus of the right eye, rendering the detection of the course of the blood vessels a matter of some difficulty.

Prior to his coming under my observation, diplopia had existed, and manifests itself occasionally at the present time when the patient is greatly fatigued; but at the time of my examination this feature was absent.

The earliest symptom observed was ptosis; but this was not apparent to him at first, for the knowledge of its existence came from members of his family, who, while sitting opposite him at table observed the phenomenon and directed his attention to its presence. For several weeks preceding its occurrence he had been annoyed with uncomfortable, and non-describable sensations about the head, but did not associate these in any manner with his present condition; and said he would not have thought of mentioning them if I had not questioned him; but considered them as due to working in the high temperature existing in the bakery. He stated that he had noticed a difficulty in closing the eyes soon after the appearance of the ptosis, but did not find this sufficiently annoying to justify his consulting a physician. As the disease progressed, he found at first difficulty, then total inability to read on account of the words and letters "running together"; sometimes one, and sometimes both; but chiefly the latter.

Coincident with the appearance of the visual symptoms, he became aware of an increasing difficulty in articulation. This condition is not constant and varies in direct ratio with the length of conversation. Members of his family described his utterances as "thick"; and this feature was well exhibited before he left my office; for while at the outset of our interview he manifested no impairment of this function, as the examination progressed words and phrases became less distinct, and finally he acknowledged his inability to control his tongue, the movements of which were not coördinated, and its action parietic. The sensation accompanying this difficulty in articulating he represents as a "tired or weak feeling in the tongue."

Another annoying symptom attributable to this same member consists in the trouble experienced in managing food after its introduction into the mouth. From his description,

it appears that there is first incoördination of the lingual muscles, resulting in the inability to place the food between the teeth prior to mastication or to properly direct the course of the bolus preparatory to swallowing. He described his distress in endeavoring to either force the food into the pharynx or eject it from his mouth; and has repeatedly been compelled to remove the food with his fingers and place it between the teeth by the same means; or, if the food has been masticated, similar methods were enlisted in order that it might safely reach the pharynx. But the difficulties do not terminate here. During the past few months he has been quite apprehensive on account of "cramps" in the throat which are present when he attempts to swallow either solids or liquids. This condition is becoming intensified, and though not invariably present is so unsettling in its manifestations as to justify his feelings of alarm. These "cramps" become evident without premonition; and as soon as the food reaches the pharynx it is almost immediately ejected in large part through the nose. Then follow coughing and sneezing with other uncomfortable sensations, memories of which render the prospect of a savory meal not an unmixed pleasure. The patient stated that he was compelled to incline his head to the left during attempts at swallowing; and then much time was consumed in conducting the food into the pharynx, as previously stated. Another feature connected with the trouble is the asthenic condition observed in his attempt to keep the tongue protruded for more than a few seconds at a time. There is no deviation, but a slight tremor was noted when he signified that the position of the tongue was causing fatigue. An examination of the oral and pharyngeal cavities revealed the existence of paralysis of the right half of the velum palati; and, in his attempts to pronounce letters and syllables, the left half of the palate was raised to its normal height while the right remained flaccid and pendulous. This condition afforded an explanation of the tendency to incline the head toward the left side during the act of swallowing, as well as the regurgitation of the food through the nose. Associated with the loss of power in the velum palati, another interesting phenomenon became apparent. Among other accomplishments our patient has acquired the art of performing on the harmonica; but this is attended with such difficulties at present that but little satisfaction is derived from this source. He states that after a few strokes have been played he is compelled to desist owing to "lack of wind;" this means that most of the air passes through the nose instead of the mouth, and consequently the tones

not forthcoming with normal intensity. In his determination to solace himself with his instrument, he circumvents the difficulty of "lack of wind" by employing a method both novel and picturesque, though it does not appeal to the strictly esthetic sense. The procedure is simple enough, and consists in closing the nostrils with the thumb and one finger of the left hand, or if this proves inconvenient, a device similar to a spring clothes-pin proves an acceptable substitute. The closing of the nasal passages was, however, but one factor in the solution of the problem of the presence of dyspnea. Upon testing the muscles of respiration, it was found that after deep or rapid breathing these muscles soon became exhausted; but in harmony with other muscles they regained their power after resting. This weakness of the respiratory muscles was in part responsible for the unsatisfactory musical performances which were not wholly the result of the condition of the refractory palate.

Other muscles showing a paretic condition included those of mastication. This was easily demonstrated when I placed my pencil between his teeth and directed him to use every effort to prevent my withdrawing it. This he found was impossible; and as I readily removed it, I found there were not even the marks of his teeth upon the soft wood pencil. The fact of his having been under examination for more than an hour may account for this symptom being so marked, for he stated that this "weakness" of the muscles of mastication was less frequent than other symptoms, and was clearly the result of becoming "tired."

Another, and the chief symptom for which he was referred to me, is the sudden loss of power in both hands and feet. While walking or standing, and without premonition, he suddenly drops in his tracks, usually becoming perfectly helpless for variable intervals, and requires assistance in order to assume the standing posture. On exceptional occasions he has been able to bring himself to an erect posture by "climbing the thighs", a symptom considered by some as being diagnostic of pseudo-muscular hypertrophy. There is never any sensory disturbance preceding these attacks, and consciousness is never altered.

Vertigo has not been present up to the date of the examination. There are no swaying movements, and his gait presents nothing abnormal.

The myasthenic condition involved many groups of muscles, and I will record one or more instances in order to show how general the condition had become. Coming from a thrifty stock, this young man occupied his time after his regu-

lar day's work in some profitable employment. Repairing shoes is his chief acquirement in this direction, and it was while tapping shoes that he discovered his inability to pick up the nails with the left hand or remove the index finger at time to avoid a blow from the hammer. He can compass this difficulty in part by the use of the middle finger and thumb but before striking a blow with the hammer he is obliged to use the right hand in pushing the index finger out of the way. Another instance, and one which exhibits the complete loss of power in the lower limbs, was afforded when he attempted to alight from his bicycle after riding variable distances. In his efforts to dismount he discovered his inability either to throw the outside leg over the frame of the bicycle, or to support the body upon the leg first to touch the ground. He has repeatedly fallen "in a heap" with the bicycle on top of his clothing very much disarranged and soiled. After a series of such experiences, he found a more satisfactory method of running beside a fence where some support could be obtained, and after a brief rest he was able to alight with some degree of comfort and safety. As might be inferred he now has abandoned cycling altogether.

It must be stated that these symptoms were not constant for he would enjoy a respite of a number of weeks, during which all of the symptoms disappeared: and he encouraged himself with the hope of a complete and speedy recovery. It was after his second relapse that the case was referred to me.

With the foregoing symptoms in view, the presence of the myasthenic reaction was necessary in order to confirm the diagnosis; and the use of the interrupted current next occupied attention.

The results of electrical stimulation were not constant and the possibility of forming an intelligent opinion regarding the behavior of a given muscle or muscle group, was far removed. The application of a strong interrupted current had the effect of producing satisfactory contractions, and the characteristic myasthenic reaction was obtained over a large area. Singularly enough the muscles recently used were not always first to become exhausted; and upon different examinations those which seemed to be most easily fatigued, sometimes recovered their normal tone more quickly than others having greater resisting power. The observation of Munk that, following the exhaustion of the muscle due to the faradic current voluntary power was still retained, found full corroboration in this case. In a case of Buzzard's the patellar reflex was preserved after exhaustion of the vastus internus.

by faradism. In the case we are considering there were no polar alterations and exhaustion by galvanism was not obtained.

Regarding the pathology of myasthenia gravis, much has been written tending to show that muscles having a bulbar innervation are the ones whose functions are most disturbed; while another contention represents the cortical centers as being responsible in greater degree. The prevailing opinions of eminent authorities have been so well presented by Campbell and Bramwell (*Brain*, Summer No. 1900) as to render any views of my own based upon the observation of a single case little else than presumptuous.

Regarding the case in its etiological bearings, I hesitate in even suggesting anything in the habits, mode of living or other feature of the case which could be said to be remotely connected with the morbid though temporary condition of the muscular system.

Here again is ample range for speculation; and I will incorporate a quotation or two for the purpose of showing some of the points investigated, which may act as stimuli to further inquiry. Buzzard, for instance, states that, "it has been supposed to depend upon the presence of a poison in connection with, perhaps—disordered metabolism: and certainly the remissions and exacerbations point in that direction. It is impossible to hazard more than a guess as to whether the higher or lower motor neurones are affected by the supposed toxin, but in my opinion the balance of probability points to the cells of the motor cortex." Plausible as this theory appears in type, it loses much of its force when confronted with the results of Bramwell's experiment of employing massage when the muscle was exhausted by the usual methods. He found that "the period of rest which was required for restoration of function was not diminished by this process;" he therefore concluded that "the disorder was not myopathic and occasioned by toxins."

In a few of the cases reported, muscular atrophy was observed; but the percentage in which this occurred is so small as to lead to the belief that its presence is quite exceptional. In my case this feature was absent.

The diagnosis depends on two positive factors, viz.: the rapid exhaustion of the voluntary muscles on exertion, and the myasthenic reaction. Negatively from the absence of sensory disturbances (slight in this case), nutrition not impaired, no atrophy, no indications of the spinal cord being involved. It has been asserted that a diagnosis can be made from the facial expression and nasal speech. I believe I am correct in the statement that the presence of the myasthenic reaction is conclusive, though, be it remembered this symptom may, exceptionally, be absent.

Prognosis is unfavorable in most cases, and almost invariably so in cases in which the respiratory muscles are involved. Two years is an average duration in these cases proving fatal. In one case death occurred in fourteen days after the appearance of the symptoms. In one of our American cases, that reported by Dr. Max Mailhouse, the duration was but thirty days. On the other side the extreme of fifteen years was reached in a case reported in Germany.

Thus far no satisfactory treatment has been discovered. In addition to what would ordinarily be suggested in the effort to restore impaired function and cell nutrition in a routine fashion, animal extracts have been employed, but with little success. Thyroid extract, Buzzard claims is "unreliable." Suprarenal extract and strychnine hypodermatically "have no effect." Tube-feeding is to be deprecated.

My suggestion to this patient was to take prolonged rest, use nourishing foods, attend to the excretions, and exercise in the open air for brief periods.

The statement to the friends was to the effect that the ultimate prognosis was decidedly unfavorable; but owing to the apparent robust condition of the patient, the occurrence of a series of remissions or actual intermissions would fulfill every reasonable expectation.

REPORT OF CASE OF EXCEEDINGLY RAPID AND VERY
SLOW RESPIRATION, WITH PAUSES IN RESPIRATION
VARYING FROM TWENTY SECONDS TO TWO MIN-
UTES IN DURATION IN A PATIENT SUFFER-
ING FROM TUBERCULOUS MENINGITIS,
SYPHILITIC PERIARTERITIS OF THE
PONS AND MEDULLA AND FROM
HYSTERIA.¹

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Mrs. B., white, *aet.* 29, widow, born in Kansas, teacher by occupation, was first seen by me in consultation with Dr. Brasher, November 3, 1899.

Family history.—Father died of cancer of the bowel and stomach; mother of consumption; other members of the family suffered from lung trouble; two of mother's sisters died from pulmonary tuberculosis.

Personal history.—She was well and strong in childhood. She had scarlet fever at her fifteenth year, but seemed to recover perfectly. She began to menstruate at her fourteenth year, and was comparatively well up to the time of her marriage, at nineteen years of age.

Six months after her marriage she was in a railroad wreck. She was thrown forward with considerable violence and the top of her head struck the upper edge of the seat in front of her. Immediately after she complained of great pain in the posterior portion of her head and in the cervical and upper dorsal region of the spine. She was confined to her bed for a period of three months, suffering from nervousness, apprehension, great prostration, headache, and developed general hysterical symptoms. During the paroxysms she would throw herself from one side of the bed to the other, scream and pull

(The most rapid respiration was 140 to 142 per minute, the slowest from 2 to 3 per minute, the latter extending over prolonged periods.)

¹Read before the Rocky Mountain Interstate Medical Association at its Annual Session, September 3 and 4, 1901.

her hair with both hands. At these times she had repeated convulsions, which, evidently, were hysterical in character as she assumed an opisthotonic position, with body arched forward, so that she threw her entire weight on her feet and back of head. These paroxysms were short in duration, but recurred repeatedly for several months, and occasionally up to the time of the development of her fatal illness and were present during the early portion of this. It was thought that she had had one or two miscarriages two or three years after her marriage, but I could not learn anything definite about these, because I saw her too late to get a reliable history from the patient. During four or five years immediately succeeding her marriage she had lived in Oregon with her husband several hundred miles from her family and most intimate friends.

Six years after her marriage she gave birth to a syphilitic child. It had all the ear-marks of syphilis and lived only a few weeks after birth. Her husband was known to be infected from syphilis.

Soon after the death of her child she separated from her husband, returned to Denver and lived with her relative a while. During her stay in Denver, Dr. Brasher, who was the family physician, saw her and detected some tubercular trouble in the apex of the left lung. She improved and was able to support herself by teaching school, although she occasionally, especially when overworked or worried, would have a slight hysterical paroxysm.

After residing six weeks in Cripple Creek, at an elevation of about 9,000 feet, on October 25, 1899, she was seized, while sitting in her chair, "with a fainting spell," and this was followed, almost immediately, by a hysterical paroxysm. The attack was relieved by a hypodermatic injection of morphine, but as soon as the medicine began to lose its effect she became hysterical, complained bitterly of headache, great weakness, a smothering sensation, and if not relieved by morphine, would pass into an apparent hysterical paroxysm, during which she would scream, pull her hair, arch her body forward and throw herself from one side of the bed to the other. It was stated that her body and limbs assumed a variety of positions seen in the major attacks of hysterical paroxysms. I have been unable to learn whether her pulse, temperature and respiration were observed.

On November 1, 1899, her sister brought her to Denver and placed her under the care of Dr. Brasher, with whom she saw her two days later.

Examination, November 3, 1899.—The patient is lying

in bed moaning, holding her head with both hands and complaining of headache. She is pale, anemic and evidently has lost considerable flesh, to which her sister, who had been with her in Cripple Creek, testifies. She is nervous and manifests many hysterical symptoms. Dr. Brasher tells me that he had been able to give her relief from headache and secure sleep only by the administration of morphine hypodermically. He corroborates the statement of her relatives that she is taking but little food and that she vomits most of that which she takes. I am informed that even a few teaspoonfuls of water make her vomit.

No paralysis or special weakness of any group of muscles is found. The deep reflexes are increased, but there is no ankle-clonus. The tendo-Achillis reflexes are well marked. The superficial reflexes are present. The plantar reflexes are normal in character. No loss of general sensation is detected. The organs of the special senses appear quite acute, with the exception of those of vision. Here the fields of vision are narrowed and the acuity of vision is lessened. It is difficult accurately to test vision on account of the severe headache from which she seems to be suffering. She is conscious, but her answers to questions do not seem to be always reliable. The optic discs are pale, but not atrophied. The pupils are equal and respond well to light and accommodation. She had not, at any time, complained of diplopia, and none is found at the time of my examination. The temperature at 11.30 A.M. is 100° F.; pulse 120; respiration 24, and otherwise normal in character. Dr. Brasher states that the temperature during the two days that he had attended her had varied from normal or below to 102° F.

I express the opinion, that while many of the patient's symptoms are hysterical in character, she is suffering from some obscure disease of the brain. Its exact nature I am unable to determine.

The heart is free from disease, the apex of the left lung is partially consolidated, but the other viscera show no evidence of disease.

A course of treatment, in which codeine is substituted for morphine, when an anodyne is absolutely necessary, is outlined.

Five days later Dr. Brasher reported to me that the patient seemed to be getting worse, he could not get along without morphine and requested me to put the patient in St. Luke's Hospital and take sole charge of her.

She is admitted into the hospital November 8, 1899, at 3 P.M. She is complaining of headache, pain in the abdomen

and constant nausea. Appetite is poor and she vomits occasionally even after taking only water. She is restless, moans a great deal and seems very miserable. At 4 P.M. 100.4° F.; P. 92; R. 24. The temperature by 6 P.M. slightly below 99° F. and remains so until 3.45 A.M., of the 9th, when it, while she is sleeping, rises to 100.8° F.; pulse and respiration remaining about the same as recorded one hour after her admission into the ward. At 9 A.M. and 12 M. of the 9th temperature is 102° F.; pulse 104; respiration 24.

The patient is exceedingly weak, has lost some flesh since I had first seen her in consultation several days previous. The character of the pulse is not good. It is irritable, poorly sustained and the volume is small. I detect nothing in the character of the respiration to arrest attention.

A careful examination reveals nothing beyond what I had observed at my first visit before the patient had been brought to the hospital. It is reported that the patient was sleeping very poorly before she was brought to the hospital but the first night in the hospital she slept six hours without an anodyne or a hypnotic. While she is still hysterical she has shown no violent outbreaks like those that had been observed while she was at home. The urine contains neither albumin nor sugar. An examination of the lungs reveals no active trouble. There is some dulness over the left apex and a little prolonged expiration in this portion, but there are no râles of any kind. There is neither cough nor expectoration. Neither the liver nor spleen is enlarged.

The irregular character of the temperature made me apprehensive lest there might be some organic brain trouble. Its tendency to be higher in the morning than in the afternoon determines me to try methylene blue lest she may be suffering from chronic malaria. She had lived in a malarious district and her head pain is said to be worse during the latter part of the night. The medicine after several days' trial has no appreciable effect. On account of pain in the lower portion of the abdomen, Dr. W. A. Jayne is requested to make an examination of the uterus and its appendages. He finds no inflammation, no ovarian trouble, nothing beyond a displacement of the womb.

November 10, 9 P.M., T. 103° F.; P. 104; R. 24.

November 10, 10 P.M., T. 103.7° F.; P. 108; R. varies from 10 to 22 per minute. She is in a stuporous condition. The temperature is taken in the left axilla. There are distinct intermissions of respiration while the patient is asleep. Breathing is more rapid while the patient is asleep than while she is awake. Both optic nerves appear more congested than

normal and there is venous engorgement of the discs. The condition may be termed a passive hyperemia. The reflex from the lymphatics of the disks and fundi is quite marked. She has complained once or twice during the day of not being able to see for a short time. She is taking a capsule to relieve pain, containing phenacetine 2 grs., caffeine 1 gr., extract *cannabis indica* (Hering's) 1-6 gr., codeine, 1-4 gr., monobromate of camphore, 2 gr., given every two or three hours if necessary. Ten grs. sodium bromide are ordered to be administered every three hours, while she is restless. She receives no morphine after she enters the hospital.

On account of the history of syphilis she is given inunctions of mercurial ointment thrice daily and potassium iodide is administered internally.

At 12 o'clock, midnight, the temperature has dropped to 100.4° F.; pulse to 98 and respiration to 14. Early in the morning of the 11th the temperature is about normal. At 8 A.M. of the same morning I find respiration rapid and irregular in frequency and character. It varies from 36 to 38 per minute. She is inclined to fall asleep while I am sitting by her bed. The respiration increases in frequency as soon as the patient falls asleep. The temperature rises during the morning and registers 102.4° F. at 12 M., and drops one or two degrees during the latter part of the day.

Nov. 12. Projectile vomiting on awakening in the early morning. Respiration 26 while awake, 32 while asleep. Temperature at 9.30 p.m. is 103° F. It is observed during the early part of the evening that respiration is irregular at times. Some respiratory acts are much longer than others. This occurs only while she is asleep. The disks present a condition of hyperemia, with slight obscuring of the edges of the disks, especially on the temporal sides. She is nauseated at times during the day and occasionally vomits.

Nov. 13. Complaints of pain in post cervical muscles. Slight optic neuritis is apparent. Respiration varies from 13 to 40 per minute during the day; temperature from 102° to 104° F., highest at 6 A.M.; the pulse varies but little. At noon I note that the breathing varies from 13 to 34 during the few minutes that I spend in watching her. The rapid respiration and the distinct intermissions invariably occur while the patient is asleep. Respiration is becoming "up and down," or "ascending and descending" in character without the intermissions seen in Cheyne-Stokes breathing.

Nov. 14. Respiration intermittent in character only while asleep, 29 respirations in 3 minutes. Intermissions 25 seconds in length occur. During the intermissions the patient sleeps

calmly, but as soon as respiration is resumed the muscles of the face, especially around the nose and over the forehead, contract, evidently on account of pain. Each respiratory effort following a prolonged intermission is accompanied by a sigh or, it is more properly termed, a groan of distress. Legs flexed at knees and thighs at hips.

Nov. 15. Patient is in a stupor and lies with mouth open. Temperature variable, pulse and respiration increasing in frequency. The legs are no longer flexed at knees and hips.

The next few days witness but little change, except temperature is lower, the pulse less frequent and poorer quality, and breathing is becoming more rapid. From the 18th to the 20th respiration is about 50 per minute. She is unconscious for 4 or 5 days. Double optic neuritis with much swelling of the disks. Slight hemorrhagic extravasation on the nasal side of right disk and on the temporal side of the left.

Nov. 21. Eight A.M. T. 100° F.; P. 124; R. 44; respiration is irregular and very shallow. If not aroused she lies in a stuporous condition. She lies with eyes open wide; there is almost constant nystagmus, occasional twitching of face muscles and constant delirium while awake. Respiration while awake varies from 10 to 16 per minute, while asleep it is and decidedly intermittent and very shallow. Pulse 135. She is troubled a great deal with hiccough.

On Nov. 22, temperature about normal, pulse 110; respiration 10 to 11 per minute while awake, 34 while asleep.

Nov. 26, little change to note in patient's condition since the 22nd. At 8 A.M. a chill occurs, lasting 20 minutes, pulse becomes imperceptible, respiration 9 per minute. She vomits a great deal during the day. No rise in temperature during or following the chill.

Nov. 28. Temperature about normal, pulse 66, respiration varies from 5 to 11 per minute for nearly 36 hours. Several intermissions in respiration varying in length from 1 to 2 minutes occur. I observe intermission of 90 seconds duration. The nurse, who is very accurate, registers several intermissions of 2 minutes in length during the night which no attempt at breathing could be detected. Death seems imminent for three days during which it is almost impossible to get her to swallow any nourishment. At one time while I was present she ceases to breathe for a period of 10 seconds, her face becomes cyanosed, and her whole body rigid. On adopting artificial respiration she begins to breathe and the muscles relax.

During the next two or three days respiration remains

very slow, then it begins to increase in frequency and on December 3 varies from 13 to 66 per minute. No change in temperature or pulse. December 4, temperature low, 95.8° F.; pulse rapid, 128; respiration 18 to 58.

Dec. 6, respiration 82; P. 130; T. 101° F.; patient is unconscious, and has been so most of the time since November 28.

Dec. 13, pulse and temperature about the same, but respiration from 54 to 110; most of time during 24 hours it is above 80.

Dec. 14, respiration reached 142 per minute. I count it when it is 130. Patient unconscious. Both optic nerves white. The tabular view of the respiration is exceedingly interesting for the next few days or weeks.

Dec. 18, post-cervical muscles quite rigid and head retracted slightly.

Dec. 26, head greatly retracted, pulse very difficult to count, it is small, weak and varies from 130 to 150 per minute.

Jan. 4, respiration 138.

Jan. 9, death occurs at 8.45 P.M. Respiration remains rapid, varying from 50 to 100 or more until a few hours before death. During the last four hours of life respiration varies from 24 to 30. Fifteen minutes before death it is 24. The temperature one and three-quarters hours before death is 104.2° F.; 45 minutes before death 102.6° F.; at death 100.4° F. About six weeks before death two bedsores began to form, one just to each side of the lower portion of the spine. These proved rebellious to care and treatment and great sloughs formed. There was little more than skin, bones and tendons left at the time of death, so extreme had emaciation become.

Autopsy, 15 hours after death. Permission was obtained to examine the brain only. Post-mortem rigidity was well marked.

Nearly all the adipose tissue had disappeared from the scalp; no abnormal adhesions of the dura to the bone. Over the entire convex surface of the brain the membranes and cortical substance of the brain appeared free from any pathologic change. The membranes were easily detached without tearing the cortex. The brain was removed intact, without difficulty, from the lower cavity of the skull. The lateral surface of the brain presented nothing abnormal, except at the fissures of Sylvius. Here the temporo-sphenoidal lobes are separated with great difficulty from the frontal lobes on account of thickening of the membranes and the adhesions that had formed between them and the brain cortex. The pia at

these points could not be detached without tearing the cortex. On exposing the upper portions of the fissure of Sylvius, they were found the seat of inflammation and the blood vessels were engorged. The pia was greatly thickened, adherent to the cortex, and every little vessel was distended with blood. Along these portions of the middle cerebral arteries numerous tubercles and small tubercular nodules were found.

On laying the brain on its convex surface and exposing the basilar surface, the lower portions of the fissures of Sylvius presented a condition similar to that found in their upper parts, including the deposition of tubercles along the vessels. There was only slight congestion along the anterior cerebral arteries, the tubercles were few and the thickening of the pia was slight. Over the optic chiasm and surrounding portions, the pia was greatly thickened and firmly adherent to the brain and chiasm. This evidently accounted for the optic neuritis and later for the atrophy of the optic nerves. Along the posterior cerebral arteries as they wind around the pons, especially on its posterior surface, the structures were inflamed, numerous tubercles were found and the pia was thickened and adherent to the brain. Both lateral ventricles contained considerable opaque, turbid-looking fluid in which there was found a quantity of flocculent substance probably lymph. In each posterior horn, more abundant on the right than in the left, there was a deposit of yellowish lymph or pus. It had the appearance of pus, but was free from any odor. The lateral ventricles were considerably distended, the fourth ventricle and the cistern were slightly enlarged.

On making the usual incisions into the cerebral and cerebellar substance the parts were normal in appearance, except that they were nearly bloodless. The pons and medulla were cut into blocks, but the blocks were not entirely detached from each other, so as not to destroy the relations between any of the parts. These were placed in a one per cent. solution of formaldehyde and given to Dr. Wm. M. Mitchell, together with the fluid from the lateral ventricles for microscopic examination.

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About 35 c. c. of fluid from the lateral ventricles were centrifuged and the sediment examined, both stained and unstained. No tubercle bacilli could be demonstrated. The sediment was found to consist of red blood cells, pus cells, fibrin and granular detritus.

The medulla oblongata and pons were hardened in weak solution of formaldehyde and when sufficiently prepared, sections were made and stained with various reagents.

Particular attention was paid to the sections which were made through the region of the respiratory center. Here it was found that there were areas of round-celled infiltration which were confined principally to the capillaries and smaller arteries. These areas were particularly numerous in the region of the floor of the fourth ventricle. When a small vessel was cut lengthwise, as there were several running lengthwise along the floor of the ventricle, the infiltration was plainly visible extending along the entire length of the vessel, and the uniformity of the cellular growth gave the arteries a heavy, inflamed appearance. When a small vessel was severed crosswise, the round cell growth could be plainly seen investing the vessel and extending into the surrounding tissue.

No giant cells were visible and no areas of softening were discovered.

The sections gave typical pictures of what I take to be small or miliary gummata, or periarteritis.

Before attempting an explanation of some of the remarkable symptoms of this case I will give a short résumé of the most important features of the clinical history.

From November 8 to November 27, respiration varied from 10 to 60 per minute, but it usually was about 24. The pulse ranged from 90 to 128; the temperature from 98 to 103° F.

For about 36 hours following the 27th respiration varied from 2 to 11 per minute, but usually it was about 4 or 5, with, at times, complete intermissions in respiration, lasting from 40 seconds to 2 minutes. The pulse during this time varied from 90 to 162; the temperature was slightly below normal.

The next 24 hours, the respiration varied from 9 to 16 per minute, the pulse from 90 to 162; temperature was sub-normal.

For 24 or 36 hours following the last period just noted, respiration ranged from 2 to 18 per minute, but it usually was exceedingly slow, pulse 100 to 130; temperature slightly above normal.

The first 12 days of December respiration varied from 4

to 80 per minute; pulse averaged about 80, but sometimes reached 130; temperature 99 to 100° F. There seemed to be no relation between pulse and respiration.

From December 12 to 19, respiration occurred from 112 to 142 per minute and averaged over 90. The respiration at this time was more rapid than the pulse. Temperature and pulse were about the same as noted during the first twelve days of December until the latter part of this period, in which the pulse began to increase in frequency, and the body heat rose and respiration to lessen in number per minute.

From December 19 to January 9, when death took place, the respiration varied from 8 to 138. It usually was ranging from 40 to 80 or 90 per minute. The pulse most of the time was rapid, but about as fast when the respiration was slow as it was when the respiration was quick. It was noted throughout the progress of the case the slight, almost imperceptible, influence codeine had on modifying the rapidity of respiration. The temperature continued at a normal most of the time during the last three weeks of life.

Seventeen days before death the patient became conscious, rallied and was able to converse rationally near the end of the day.

Nine days before death, she again became conscious, but was unable to speak so as to be heard. She seemed entirely blind.

It was observed repeatedly during her unconscious periods, sometimes lasting several days or a week, that the frequency of respiration would vary from 28 to 68 within minutes. These variations occurred without her moving or any one disturbing her. It should be noted that extra rapid or slow respiration never occurred while the patient was fully conscious.

It should be remembered that intermissions in respiration first occurred while the patient was asleep and were at that time most marked at this time, or during the periods when she was profoundly unconscious. The respiration was most rapid, or slowest, when it varied from the normal, while the patient was asleep, or unconscious from other causes. Extra rapidity of respiration, 100 to 142 per minute, or ex-

slowness of respiration, from 2 to 4 per minute, only occurred during periods of profound unconsciousness and never during normal sleep.

Pathology.—So far as I have been able to learn none of Mrs. B.'s relatives have been hysterical. She was not hysterical until after she was injured in a railroad wreck when she was nineteen and one-half years of age. Just the exact nature of the injury no one will ever know, but the patient complained bitterly of pain in the back of the head, in the upper portion of spine, almost immediately after her body had been thrown forward with considerable violence, the top of her head striking on the upper edge of the car seat in front of her. Soon after this accident she manifested hysterical symptoms and was confined to her bed for a period of three months. She remained hysterical ten years, or the remainder of her life. In her case I think we are justified in presuming that she sustained at the time of the wreck some organic lesion in the medulla, pons or adjacent parts, and that the subsequent hysteria was the screen by which the true state of affairs was hidden from view, or, as Dr. S. Weir Mitchell has expressed it, "Hysteria was painted on an organic background."

We know that injuries to the brain determine to a certain extent, the location of syphilitic lesions of this organ. It is probable that the old injury to the medulla rendered the arterioles in this locality more vulnerable to the syphilitic poison than those of other portions of the nervous system. To what extent the tubercular meningitis modified the symptoms of the lesion in the respiratory region of the medulla, it is impossible to say.

Points in the diagnosis.—It must be conceded that the problem of diagnosis was a knotty one before the symptoms of organic disease developed sufficiently to render it evident that hysteria was simply the result of organic disease of the brain. The history of an injury to the head and of syphilitic infection many years previously and the presence of tuberculosis of the lungs, together with fever, made it very probable that the patient was suffering from organic disease of the brain. On the other hand we occasionally meet with hyster-

ical subjects in whom we are unable to find any organic cause with fever varying from 100 to 101° F. or more, especially during the latter part of the day. Dr. S. Weir Mitchell and others have reported many such cases. A history of syphilitic infection, or the presence of tuberculosis of the lungs is only corroborative and never positive evidence of organic brain trouble in such cases as the one reported in this paper. The history of hysterical manifestations extending over a period of ten years, the symptoms varying but little in character during these years, pointed strongly to hysteria. There was something about the patient's appearance, especially the marked wasting, that I was informed had taken place within a week, which made me suspicious of organic disease of the brain. I so expressed myself at the time I first saw the patient, but a more definite diagnosis I would not attempt.

After she was placed under my care the first positive indication that I had of organic disease was the respiration being more rapid while the patient was asleep than while she was awake. The irregular character of the temperature, being higher in the early morning than during the latter part of the day, indicated some inflammatory disease of the brain. Unless I had had the services of an excellent and closely observed and trained nurse, I should have been kept in the dark in regard to the diagnosis longer than I was.

How are we to explain the very rapid and the extremely slow respiration in this case, together with the phenomenon that there was no apparent relation between the number of respirations and the frequency of the heart's action?

The normal frequency of respiration is about 16 to 24 per minute. The relative frequency of respiration in health to that of the pulse beat is about one to four. In hysteria and in certain diseases, but more especially in those lesions affecting the pneumogastric nerves, or their branches, this relation is lost, and the number of respirations per minute may either fall below or exceed the number of heart beats per minute.

Dr. S. Weir Mitchell says: "Hysteria breaks all laws, except its own rules of eccentricity."² On the same page

²"Lectures on Disease of the Nervous System, especially in women." p. 199, edition of 1885.

gives a tabular view of the pulse and respiration of a hysterical woman whose average frequency of respiration to pulse beats "was about as one to two; and on one day at the same time, respiration was 89 per minute and pulse 88." On page 200 he mentions a case which he saw with two other physicians. The patient had passed into a state of stupor, from which, for two days, it had been impossible to arouse her. The pulse was about 90, respiration was almost imperceptible, but on careful count it was found to be 96 per minute. Dr. Mitchell gave the opinion that the case would, in the end, prove to be hysterical, and he adds, "An opinion justified within a few hours by the repeated occurrence of very violent hystero-epilepsy."

Dr. Mitchell reports a most remarkable case^a in the person of a soldier who was shot in the right chest on May 31, 1862, while engaged in the battle of Fair Oaks. The injury resulted in great hyperesthesia of the right lower chest. The ball passed into the lung, and caused bleeding from the lung and was thought to have become encapsulated and remained in the chest cavity. About eight years later, Dr. Mitchell found the patient still suffering from hyperesthesia of the chest, and in addition from very rapid respiration. When the man was quiet in his room, the pulse was 74, respiration 66 per minute. After running up and down one flight of stairs twice, his pulse was 100, respiration 108 to 110 per minute. Ten days later, the respiration and the heart beats were the same per minute, viz., 78. A little exercise caused the heart to beat 95 times per minute and the respiration to increase to 125. The patient was taken before the College of Physicians of Philadelphia, but no one could give an explanation of the remarkable phenomena. I will not tire you with reference to further cases. I have said sufficient to remind you that hysteria is at times attended by exceedingly rapid respiration. Let us study the results of physiological experiments on the pneumogastric nerves before attempting to account for much of the curious conditions observed by Mitch-

^a*Ibid*, pp. 201 to 207.

ell and some of those observed by me in connection with the case of Mrs. B.

If both pneumogastric nerves be divided the number of respirations falls in some animals to 2 or 4 per minute. If the central ends of the pneumogastric are gently stimulated the respiration increase in frequency beyond the normal. Greater stimulation may slow or arrest respiration. The superior laryngeal nerves, on account of their extreme sensibility, respond to a slighter stimulus than do the pneumogastrics. The superior and inferior laryngeal nerves constitute the inhibitory nerves of respiration.

The subordinate centers of respiration, several in number, are in the brain and spinal cord. The predominating respiratory centers are situated in the medulla. They are two in number and lie behind the superficial origin of the vagi, or on either side of the posterior apex of the calamus scriptorius, between the nuclei of the vagus and accessorius.⁴

The exciting fibers of respiration lie in the pulmonary branches of the vagus, in the optic, auditory, and cutaneous nerves; normally their action overcomes the action of the inhibitory nerves.

It is probable that mild stimulation of the respiratory centers in the medulla will give rise to even more rapid respiration than gentle stimulation of the afferent exciting nerves of respiration. Certainly destructive lesions of the respiratory centers will slow or arrest respiration.

In hysteria the whole sensorium is in a state of excitation, and especially the cutaneous, optic and auditory nerves which increase the frequency of the respirations. Besides hysteria the power of inhibition is lessened, thus allowing the exciting nerves of respiration or of the heart to act at their own sweet will. We know that exhaustion of the exciting nerves of respiration or of the heart, or of the centers of respiration, or of the heart will cause slowing of respiration or of the heart's action, as the case may be.

May we not in this manner account for the loss of the normal active frequency of respiration to the heart's action? It seems

⁴"Text-Book of Human Physiology," Landis and Sterling, Third Edition, p. 712.

to us, at times, that hysteria ignores all laws, while, in fact, the functions of the body are probably just as law-abiding in hysteria as they are in any other disease.

May one not account for the rapid respiration and the loss of the relative frequency of respiration and the heart's action in the case of the soldier, reported by Dr. S. Weir Mitchell in his lectures on nervous disease?⁸ In this case while the patient was at rest the number of respirations per minute was slightly less or equalled the frequency of the pulse, and on slight exercise both respiration and pulse were increased in frequency, but the respiration to a greater extent than that of the pulse; so that, the number of respirations per minute at one time was 125, the pulse was only 95. In this case the cutaneous surface of the right chest (lower) and the right lung were constantly irritated by nerve injuries that would naturally increase the frequency of respiration. Besides, the man had been suffering from a painful injury for a period of eight years, and had undoubtedly become hysterical. In consequence the power of inhibition was at a low ebb. The facial spasm that occurred several times daily would point to irritation of the pneumogastric nerves as these nerves are connected with facial nerves.

In the case that I have given at some length and detail in this paper, the subordinate centers of respiration, the cutaneous, optic and auditory nerves, those of the lungs, cord, and cerebrum were practically held in abeyance by the predominating centers of respiration in the medulla which were directly irritated by a lesion in the medulla. It is probable that the condition of the blood, which ordinarily affects the predominating centers of respiration to a greater or less extent, was overpowered by the lesion in the medulla.

If we were justified in assuming such a condition to have existed, and it seems to me that we are, we can readily see how an irritating lesion in the exciting centers of respiration would increase the number of respirations almost to an unlimited number. On the other hand, an irritating lesion in the inhibitory centers of respiration, might decrease the number

⁸See pp. 201 to 207.

of respirations per minute to 1 or 2, or arrest respiration entirely, as occurred on one or two occasions, when the patient seemed dead, and was revived at the end of two minutes by means of artificial respiration.

In hysterical subjects with exceedingly rapid respiration morphine, codeine, chloral and other drugs that have a depressing influence on the respiratory centers in the medulla, lessen the number of respirations per minute to one-half or one-fourth of what it was before the drug was administered. In the case of Mrs. B. codeine had no such influence on respiration when it was rapid.

In conclusion let me add: (1) That when we find a case of hysteria we perceive the veil that obscures or the cloak that hides the symptoms of organic disease, or gravely disordered functions, of some important organ.

(2) That respiration which is more rapid while the patient is asleep is strong if not positive evidence of organic disease of the brain in the region of the respiratory centers.

American Neurological Association

Discussion on the paper, by Dr. James J. Putnam and Dr. Edward R. Williams, entitled: "On Tumors Involving the Corpus Callosum." (See December, 1901, number of this Journal.)

DISCUSSION,

Dr. P. C. Knapp passed around a brain stating that the patient from whom it had been removed, before Dr. Knapp had seen him, had been trephined over the right parietal eminence to relieve pressure, a small trephine hole being made about one-half inch in diameter, and the lateral ventricle on this side had been tapped. The symptoms made the diagnosis doubtful as to whether the tumor were cerebellar or prefrontal. He was trephined over the left cerebellum, nothing was found, and he died not long after with increasing coma. At the autopsy an enormous glioma, apparently having its origin in the right caudate nucleus was found. It had occluded the lateral ventricle so that the anterior portion of this ventricle was enormously dilated, and the brain substance covering the ventricle was extremely thin. On opening the brain, a clear, yellowish, translucent clot, the size of a small Bartlett pear, popped out from the interior of the lateral ventricle before the division was made of the tumor in the basal ganglia.

The growth apparently extended into the corpus callosum as well, although on that point Dr. Knapp was not quite positive.

Dr. B. Sachs believed it would be well to have discussion on a few points to bring out the result of collected experience in this matter. He was reminded of one point that was brought out forcibly by Dr. Putnam in his paper, and that is the surprising adaptability of the brain to the pressure from tumors. That seemed to him to be the case not only with some of the physical symptoms we are accustomed to associate with brain tumors, but also in part it is the case with regard to the mental symptoms. It is on this point he wished to say a word. He had under observation, and several gentlemen had seen the case with him, a rather unusual case of brain tumor that had now run a course of three and a half years. The variability in the mental symptoms had been most astounding. About three years ago, six months after the onset of the first symptoms, blindness developed and with

the onset of the blindness the girl passed into a condition that could properly be described as one of slight apathy with more or less silliness and almost dementia, so that for a year and a half the girl was more or less indifferent to surroundings, had occasional fancies, occasionally recalled things that happened long ago, but for all practical purposes the mental condition was nearly a blank. The tumor had evidently been growing, and yet a most surprising change in her mental condition had occurred, so that at this time the girl is practically as bright as before the first symptoms of brain tumor appeared. In this case Dr. Sachs was very much struck by the extreme variability of the mental symptoms, the recovery from a condition amounting almost to dementia, recovery such as he had not seen in any other case of brain tumor. The first symptoms in this case were those associated with the optic nerve. The girl had a loss of half vision of one field with a central scotoma of the other. These symptoms persisted six months, and although repeated examinations of the eyes were made by competent oculists, there was no optic neuritis or optic atrophy made out. After six months the first signs of optic neuritis appeared, and since that time the complete atrophy has supervened, and of course the blindness is a permanent one.

That led to the second point, whether in other cases of brain tumor the retinal fields have been carefully examined, and whether in the cases in which there is limited and irregular obscuration of the retinal fields, we must almost always suppose that the tumor is near the optic chiasm, or in other words, whether in cases of brain tumor with the tumor at some distance from the optic nerve, partial retinal anesthetics may occur.

The only other point Dr. Sachs insisted upon is that the operations for the relief of pressure in these cases should be encouraged. In the very case Dr. Sachs spoke of the girl was troubled for a number of months by most violent pains in the distribution of the second and third branches of the trigeminus. The tumor is now presenting on the surface over the parietal region and it was doubtful as to whether there was a metastatic growth near the trigeminus or whether the pain was the result of indirect pressure. At all events, a trephine opening was made a little to one side of the tumor as it presented in the parietal region, and the trigeminal pain disappeared very promptly after intracranial pressure had in this way been relieved. This somewhat fortunate result suggests the propriety of making trephine openings in the case of cerebral tumors even if there is no possibility of enucleating the

tumor or of reaching it at all. In this case an attempt was made to excise a part of the tumor for histological examination, but the hemorrhage was so great that the girl would unquestionably have died on the table, and knowing that the entire tumor could not possibly be enucleated, any further attempt at enucleation was abandoned.

Dr. P. C. Knapp said in regard to the tumors in the callosum he would speak of two cases involving the callosum—one a girl of fourteen who about four weeks before death had had symptoms of headache, nausea, vomiting, weakness, fever, loss of knee-jerk, tenderness of the neck, and some rigidity. She died at the end of four weeks with the symptoms of an ordinary meningitis. A meningitis of the base and spinal cord was found. At the autopsy, however, a firm tumor about the size of a walnut, was found on the corpus callosum, not, however, involving it deeply.

The second case was a boy of nine, who came to the hospital February 1, 1899, with a history of choreic movements in the right arm for two weeks, and unsteadiness of the right leg, also inability to hold his water and spasm of the right eyelid. It was at first glance suggestive of ordinary chorea, except that there was paresis of the left face. There was no real paralysis anywhere, the fundus was normal, and there was no special headache. Six weeks later he was brought to the hospital, having been attacked four days before with severe headache and vomiting. He was steadily growing worse, and became more and more stupid and unconscious. He moved the left side, the side opposite to the side which had shown the choreic movements, less than he did the right, but he was able to move it to some extent. He was in a critical condition, and was taken into the hospital and died the next day. The brain was found flattened, the ventricles dilated, a tumor 3 cm. in diameter with a hemorrhage in the center was found in the right caudate nucleus. The growth extended into the anterior and outward portion of the corpus callosum.

A third case under observation was suggestive of a growth somewhere on the median portion of the brain, possibly callosal from the fact that the boy in March, before he came under observation, had a sudden attack of paralysis of the right arm which lasted two or three weeks, and wholly disappeared. This was followed by headache and vomiting which continued for a month; then, while steadily improving, paralysis of the left arm developed, more marked in the hand and forearm. With that there was paresis of the left face on voluntary movement, although he could move the face

perfectly when he laughed. In addition to that there was optic neuritis and the persistence of headache with occasional vomiting, especially when rising to the erect position. These symptoms are still in existence.

Dr. J. H. Lloyd referred to one point with reference to the symptomatology of these tumors. He thought Dr. Putnam's paper presented evidence of remarkably little cortical irritation in these growths in the neighborhood of the corpus callosum, although there appeared to be very good reason why there should not be more. He was reminded of this in a case which he saw in consultation a few years ago, in which a tumor growing very nearly in the location described by Dr. Putnam, springing from the upper part of the middle of the corpus callosum and involving especially the cortex of the paracentral lobule, gave rise to a curious symptom which Dr. Lloyd had never seen before in brain tumors. He thought, however, it had been described by some writers as a "lock-spasm." This man had no epileptic attacks, and yet the affected arm—the symptoms were entirely unilateral—was involved in such a way that if the patient were asked to take your hand and hold it tightly, he could not let loose; his hand immediately fell into a condition of lock-spasm, so that the fingers had to be pulled off successively. This, of course, was indicative of cortical irritation, and yet it is hard to localize it exactly as the tumor occurred on the mesial aspect of the brain. The point was raised at the time as to the ability of the brain cortex to resist irritation where that is applied with a certain degree of regularity, or gradually, where the cortex is, as it were, trained to resistance. Dr. Lloyd thought at the time this consultation was held, they were making experiments in the University of Pennsylvania on dogs, in which it was proved that by slow and gradual increase of the irritation of the cortex epileptic convulsions were not excited. His idea in this case was that the cortex was gradually habituated to the irritation, and in that way it escaped what we might call epileptic involvement, but, on the other hand, this peculiar spasmodic action which he had described was present. He did not think it is hard to understand the involvement of the arm and leg in these cases, considering how pressure might very readily be made upon the internal capsule, but the absence of cortical irritation in some of these cases had occurred to him as being rather peculiar.

Dr. T. Diller spoke of one very practical point, a point which, perhaps, is more surgical than neurological, and yet which we ought to consider, and that is the question of doing these operations in two stages. Persistent hemorrhage in

operations on tumors is most uncommon. It is the custom of Mr. Victor Horsley, who has done so many of these operations, to do them in two stages, that is to say, do the trephining, cutting down to the dura, or, perhaps, opening the dura, and a few days or a week later making the attempt to remove the tumor. Dr. Diller was impressed with this a good deal, because very recently in a patient of his own, operated upon by Dr. Stewart, of Pittsburg, there was an enormous amount of hemorrhage, vicious and persistent, and he was quite sure that the patient would have died had the operation been persisted in. The wound was closed after packing with gauze, and a week later a partially successful effort to get the tumor out was made, that is to say, a portion of the tumor was removed.

One other point Dr. Diller mentioned, a point referred to by Dr. Sachs, and that is the propriety of doing a trephine operation simply for the relief of headaches. He entirely agreed with Dr. Sachs that such an operation is entirely justifiable. These headaches are sometimes of enormous severity, and may be almost completely relieved for a time; and there is another point to be borne in mind with regard to a simple trephining operation; when we do not encounter the tumor there is only a small danger of death, not nearly so great as where the tumor is found and removal attempted.

Dr. W. G. Spiller said that from three cases he had gotten the impression that tumors growing from the dura are liable to cause a great deal of hemorrhage, if an attempt is made to remove them; one, a case of his own was operated on two or three years ago, and as soon as the trephine opening was made and attempt was made to remove the bone flap, hemorrhage began and was exceedingly profuse. Another was a case of Dr. J. K. Mitchell, operated upon by Dr. Keen, and the third case Dr. Sinkler had reported at this meeting. In all three cases a tumor was found growing from the dura, two, endotheliomata; one, a spindle-cell sarcoma. Dr. Spiller wished to know whether in the experience of others the tumors which grow from the dura are more liable to cause a bloody operation than others. Perhaps Dr. Diller's tumor was one growing from the dura.

Another point is that these tumors growing from the dura will cause intense compression of the brain with relatively few symptoms. In his own case the compression of the brain was intense—in the motor area the cortex was compressed about one and a half inches below the level of the surrounding parts and yet only paresis of the limbs existed.

The point Dr. Sachs had mentioned, trephining for the

relief of symptoms, was very interesting. Dr. Spiller had a case with symptoms of cerebellar tumor, but no tumor was found at operation. Since that operation, about two years ago, the symptoms have largely disappeared. It was, perhaps, a case of internal hydrocephalus. Dr. Spiller wished to know whether in the experience of others it is advisable to operate on tumors of the cerebellum. He had seen several cases with symptoms of tumor of the cerebellum. It has seemed advisable to some neurologists not to recommend operation where the symptoms are those of tumor of the cerebellum.

Dr. C. K. Mills thought one point must be borne in mind, in regard to tumors of the callosum, namely, so far as he knew, no case of tumor of the callosum had been reported in which the growth did not involve, and in most cases extensively, the adjoining parts. He did not know, exactly, what is the result as regards this matter in the table prepared by Dr. Putnam and his colleague. From the very nature of the structure, and its size and position, this is likely to be the case; still he believed that something could be contributed to our knowledge of the functions of the callosum by reports of such cases. To illustrate what he meant: in the case of Dr. Sinkler, and also in the case of Dr. Sachs, and, perhaps, in one of the cases of Dr. Putnam, the symptoms seemed to point to a growth in some portion of the prefrontal region. In Dr. Sinkler's case it turned out that the lesion had involved the prefrontal on both sides. It is probable that tumors of the callosum do give mental symptoms of peculiar character, symptoms due to the dissociation of different cerebral activities, not necessarily of symmetrical portions of the brain which are correlated by means of the tracts which pass through the callosum. It is probable that they give a peculiar form of ataxia. In conclusion he called attention to the point that in every case referred to in this discussion the symptoms which were of importance were attributable mostly to the effect of the callosal tumor on other parts.

With regard to the case of Dr. Leszynsky, Dr. Mills said that it illustrates the fact that the tumor, beautifully localized and removed carefully from the motor region, was one which both before and after the operation was characterized by purely motor symptoms.

One word with regard to operation. He had seen a very large number of cases of operation on the brain, especially for brain tumor. His experience extended over many years (from about 1886), and he had been strongly impressed with the fact that both neurologists and surgeons do wrong at the

operating table. The surgeon should be more expeditious; lectures should not be delivered at this time; consultations should not be reheld over the operating table, the patient's life during all these procedures being in jeopardy. The growths could sometimes be removed in half the time or in much less time if the strictest attention were paid to nothing but the business in hand.

Dr. G. W. Jacoby emphasized the position Dr. Mills had taken. He thought it was an exceedingly practical one, and the more positively we give expression to that opinion in this Association, the better for our patients, and also for surgeons and neurologists. He believed too much time is lost at these operations, and that the question of minutes is live-saving, and without wishing to cast any imputation upon the surgeons, it is certain that they have grown in the habit of taking plenty of time in operations. In operations upon the brain there is a grave necessity for speed and for reasons entirely aside from that of profuse hemorrhage.

As to the remark Dr. Spiller made in reference to the amount of hemorrhage from dural tumors, Dr. Jacoby said he always expected to have a greater amount of hemorrhage in tumors than in brain operations for any other purpose, so that in all tumor operations he expected a large hemorrhage, but he expected to have a very much greater hemorrhage in dural tumors than in any other tumors, but whether that opinion is an opinion formed from a specific number of cases, or a general impression, he did not know.

Dr. F. W. Langdon said in respect to the question raised by Dr. Spiller as to whether it is advisable or not to operate in cerebellar tumors, he (Dr. Langdon) knew personally of four cases of cerebellar tumors which have recovered. Two in children were operated on by Victor Horsley. Dr. Langdon was present at one operation. Another case was kindly shown to him by Macewen, of Glasgow. Eleven days after the operation this patient, a middle-aged man, walked the length of the ward. This man and one of the children were blind and remained so after the operation. The fourth case occurred in Dr. Langdon's practice, and was operated on by Dr. E. W. Walker. The man had had one sharp attack of optic neuritis which had subsided. The symptoms of tumor had been preceded twelve years before by traumatism at the front of the head. A cerebellar cyst containing two ounces of bloody fluid, was evacuated, and the man is now walking around town, spastic in both legs, but has been able to do some light work, and *has good eyesight*. Dr. Langdon contended that if there is a chance of saving vision or a fraction

of vision, it is advisable to operate if it is only to relieve pressure. Here was a man who had had one attack of optic neuritis. In such a case delay is very dangerous. It seemed to Dr. Langdon we should take some chances, perhaps more in cerebellar tumors than almost any other, and give the patient the full benefit of any doubt.

Dr. J. Sailer called the attention of the Association to a couple of articles he had occasion to refer to recently, one by Jaboulay, who was obliged to operate on a very vascular tumor of the thyroid, and another by Kehr, who had three cases of cholemia requiring operation as result of gall-stones, in all of which there was excessive tendency to hemorrhage. The surgeons were naturally very much alarmed at the prospect of losing the patients on the table, and employed injections of gelatine for prophylactic purposes. It had occurred to Dr. Sailer that perhaps such injections of gelatine given before the operation, according to the method employed by Kehr and Jaboulay, might possibly be of benefit, and on some occasions might even save life.

Dr. W. Sinkler emphasized what Dr. Mills said in regard to the necessity for more expedition in the performance of these operations. He thought surgeons do not realize the importance of great promptness in completing an operation on the brain.

Dr. J. J. Putnam said he was glad these remarks had been made about operations. He had long been in the habit of recommending operative treatment in cases where recovery was hopeless, and the operation had been repeatedly done in two stages. He had several times used the lumbar puncture with, he thought, considerable benefit in the way of relief of pressure. In the case of one little girl in particular, the cerebro-spinal fluid spurted with force a number of inches into the air, and after a period during which she felt worse, there was a long period of very considerable relief. Dr. Putnam had sometimes wondered whether with the cerebellar tumors we really might not gain more by taking out a large piece of bone over the hemispheres, than by confining the operation to the neighborhood of the cerebellum, where it is necessary to confine oneself to such a small opening. He was glad Dr. Sailer spoke of the matter of the gelatine. The same idea had occurred to him, and he thought it might be a very fruitful one.

Dr. J. J. Putnam showed a patient in connection with the subject of muscular dystrophy, some of the features being so very striking, the enormous size of the deltoid compared with

the extremely small size of the upper arm. There was also a double facial paresis. Besides that it was interesting to note the extreme shallowness of the chest, antero-posteriorly, the ribs having all fallen in from failure of the inspiratory muscles. Then the ensuing paralysis was shown in a beautiful manner. The legs were weak and more or less atrophic, but did not show in a gross way anything striking. The patient had had this trouble since about twelve years old, and had kept at work and supported himself in spite of it. A year or two ago Dr. Putnam had seen a patient with enormous thighs, but absolutely atrophic in the legs below the knee, who was making records on the bicycle track, and also working as an expert watch-maker with the extremely feeble hands.

Dr. Putnam passed around two specimens of tumors of the corpus callosum to illustrate his paper.

A CASE OF MYELOMA OF THE SPINE WITH COMPRESSION OF THE CORD.*

JOHN JENKS THOMAS, A.M., M.D.

ABSTRACT.

A man thirty-nine years of age, was attacked by severe pain between the shoulders which lasted four or five days. After that he improved but there was more or less pain on movement; six weeks later he noticed a slight uncertainty in the use of the legs and numbness in the legs, and sensation of constriction about the abdomen. Eight weeks afterward there was slight diminution of the sense of touch and pain below the eighth rib, and very slight paresis of the legs without increase of the reflexes. The spine was freely movable and it was not tender, but there was a slight kyphosis in the upper dorsal region. The symptoms increased, and four months after the onset, and two months after he was first seen, he was confined to the bed with a paraplegia with increased reflexes, loss of the sense of temperature and pain and diminution of that of touch to the fourth rib, and paralysis of the sphincters. The spine was not tender and motion was fair. There was a slight swelling on the left fifth rib. The patient was operated upon by Dr. Munro. A soft reddish tumor mass was found affecting and destroying the laminae and body of the fourth dorsal vertebra, and was removed as far as possible. The wound healed well and the patient regained completely strength and sensation in the legs and control of the bladder. The tumor mass was found to be composed of small round cells with large nuclei, very similar to plasma cells, except for the presence of a nucleolus. There was a very fine reticulum. There was about a quarter of one per cent. of albumose, and three-quarters of one per cent. of albumin in the urine, with tube-casts. The examination of the blood was negative except for a leucocytosis of twenty thousand, without relative change of the varieties of white corpuscles and the normal number of red corpuscles with seventy per cent. of hemoglobin. The patient was given bone marrow and Coley's toxins. The operation was six months ago and there has been no return of the cord symptoms. Since then tender swellings of other ribs have appeared and quieted down; six weeks ago there was a return

*Read before the American Neurological Association, June, 190

of pain and tenderness in the back at the tenth dorsal spine, with pain passing about the trunk on pressing upon the head.

Myelomata are multiple tumors, affecting chiefly the spine, ribs, skull and pelvis, developing from the cells of the marrow, composed of cells resembling plasma cells. They usually produce albumosuria, though this is found in other lymphoid affections of the bones, as in pseudo-leukemia and leukemia. The most constant symptoms are pains in the back and chest, swellings on the ribs and deformities of the spine and thorax, sometimes accompanied by compression of the cord. There is no tendency to form metastases, but the disease frequently produces a severe anemia of the secondary type without megaloblasts in the blood, or any marked changes in the number or proportion of the white corpuscles.

The interesting features of the case aside from the rarity of the tumor were the relief of pressure on the cord by laminectomy, the presence of disassociation of disturbances of sensations of temperature, pain and touch from pressure upon the cord from without, and the apparent improvement of the condition in the bones from the use of bone marrow and Coley's toxin treatment.

DISCUSSION.

Dr. P. C. Knapp said that he had seen the case in consultation with Dr. Thomas. At that time the presence of the slowly-increasing paraplegia with spasticity and with disassociation of sensory disturbance, of which Dr. Thomas had spoken, were very strongly suggestive of a growth involving the cord itself. He was decidedly sceptical as to the benefit of any operation, thinking that they had to do more probably with a glioma of the central portion of the cord. Strümpell, in his latest edition, urges that the loss of temperature and pain senses with the retention of tactile sensibility is almost conclusive proof of central disturbance in the cord, although later on in the same book he admits that he has seen practically the syringomyelic symptom-complex in cases of spinal caries. This case from its clinical standpoint, certainly might be classed with those cases of caries where the pressure from without had apparently given rise to the syringomyelic symptoms.

Dr. Langdon, in connection with the liability mentioned by Dr. Knapp, of mistaking caries for syringomyelia, or having the two confused on account of the disassociation symptom, mentioned a case of apparently pure pachymeningitis spinalis externa, following gonorrhea, and located cervically,

in which this dissociation symptom was also present. There was no evidence in any way in that case of caries and the perfect recovery of the patient without impaired mobility rather negated the supposition of caries. The syringomyelic dissociation symptom is not so strictly limited as was formerly thought.

Dr. J. J. Putnam spoke in favor of operations for tumors involving the spinal cord even though the complete removal of the tumor is impracticable and even though one might anticipate that such might be the case. In support of this favorable judgment he wished to refer to a case which he published some years ago in connection with an entirely successful operation where Dr. Warren removed a small fibroma. This case was one where a sarcoma was present in the cervical region. Dr. Elliot operated. There was extensive disease so that all the bones absolutely crumbled from the instrument used. The tumor could be gouged out with a spoon with perfect ease, and the portion so removed amounted to a large portion of the visible parts of at least two cervical vertebræ. Everybody supposed that the patient would die, but, although at the time he was not only completely paralyzed in the limbs, but so largely as regards respiration, he gradually improved and Dr. Putnam heard last autumn from him that he was able to walk down stairs and take his Thanksgiving dinner, although it is now some four years since the operation was done. Dr. Putnam spoke also of another case reported at the same time, where intense pain had been present for a long time, across the back and shoulders, due to an intraspinal new-growth. Here Dr. Warren laid open the spinal canal (which had been done some years before) allowing free drainage of fluid. The pain was at once relieved and has never returned though the operation was done five or six years ago.

ACUTE ALCOHOLIC MULTIPLE NEURITIS WITH PECULIAR CHANGES IN THE GASSERION GANGLION.*

BY DR. CHARLES W. BURR AND DR. DANIEL J. MCCARTHY.

• ABSTRACT.

B. K., female, *aet.* thirty-seven, was admitted to the Philadelphia Hospital suffering with acute alcoholic multiple neuritis. She developed shortly after admission incontinence of urine and feces and died five weeks after admission, having suffered for three weeks with severe respiratory disturbance without physical signs during life or pathological lesions post-mortem to account for it. At autopsy there was found widespread degeneration of both the central and peripheral nervous systems, of the pelvic and sacral plexuses, of the vagus and phrenic nerves, with hemorrhagic extravasations into the sheaths of the latter.

In the Gasserion ganglion besides the degeneration of the nervous fiber elements there was an extensive degeneration and at times complete degeneration of the ganglion cells; in some of the degenerated cells there was a calcareous infiltration completely filling up the capsule and having a peculiar crystalline character. There was also a proliferation of the nuclei of the stroma and an intense proliferation of the cells of the capsules of the ganglion cells, in some cases entirely filling up the capsules. The picture at first sight resembled the ganglion of a case of hydrophobia, but differed in the absence of any special congestion of the ganglion and the chronic character of the capsular cell proliferation as manifested in the presence of a more completely formed cell body. There was also a difference in the proliferation of the capsule cells outwardly into the stroma as well as into the cell body. This is not met with in hydrophobia. Even in the absence of any of these distinct changes the presence of degeneration in the peripheral nerves would be sufficient to distinguish these specimens from rabies, because demonstrable changes are never present in the peripheral nerves in rabies. The degeneration of the pelvic nerves explains the loss of bladder and rectal control, and are of importance in showing that not only these symptoms, but also the presence of amenorrhea and impotence occurring in the course of multiple

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neuritis may be due to an involvement of the nerves having these functions under control.

If the assumption of Van Gehuchten and Nelis be correct, that the paralysis in rabies is due to the changes in the intervetebral ganglion, it would perhaps be worth while to consider these ganglion changes as contributory to the peripheral nerve changes in the production of the peripheral and cranial nerve palsies.

DISCUSSION.

Dr. Knapp said that in his experience in a very considerable number of cases of multiple neuritis, especially the alcoholic forms, paralysis of the bladder and rectum was extremely rare. In most of the cases it seemed to him either that there had been some involvement of the cord as a result of the poisoning or that there was merely the involuntary discharge from the bladder and rectum in consequence of the polyneuritic psychosis.

Dr. Joseph Collins asked Dr. Burr, in view of the changes which had been described in the spinal cord, if there were any anemia. He thought probably no blood count had been made; if that were so then whether or not there were any anemia, because the changes described in the spinal cord were very similar to those reported as occurring with anemia.

Dr. H. T. Patrick asked the experience of the members as to the frequency of incontinence of urine and feces in so-called multiple neuritis. It seemed to him a more proper name for cases such as this would be poisoning of the motor elements, including their peripheral projections. He had had a case in which the rectum and bladder were both paralyzed and when this occurred he was inclined to change his diagnosis from multiple neuritis, but the marked improvement caused him to accept his original diagnosis.

NEW YORK NEUROLOGICAL SOCIETY.

November 5, 1901.

The President, Dr. Joseph Collins, in the chair.

Portrait of Dr. E. C. Seguin.—Dr. J. Arthur Booth presented to the society a portrait of one of its founders, the late Dr. E. C. Seguin. The portrait was donated by Mrs. Seguin.

Case of Disseminated Sclerosis.—Dr. William M. Leszynsky presented a man whom he had first seen about two years ago. At that time the patient was thirty-two years of age, and had been well up to eighteen months previously. At that time he had suffered from occasional diplopia, but it had since almost disappeared. He had had occasionally a staggering gait and speech had become slow. There had also been some difficulty in swallowing. There had been no headache, tinnitus or vomiting, and no bladder symptoms. When first seen he had complained of being nervous and emotional. The examination showed him to be healthy in appearance. There was slight hesitancy in speech, and he was disposed to break into tears on slight provocation. There was slight horizontal nystagmus on efforts at fixation. The fundi and the visual fields were normal. His gait was slightly ataxic, and there was slight dragging of the right leg and a tendency to fall to that side. Both knee-jerks and Achilles reflexes were exaggerated. The examination of the urine was negative. On January 23, 1900, there was slight paresis in the left posterior thigh muscles and slight ataxia in the left upper extremity. In May it had been noted that he was not so emotional, but he dragged the left leg in walking, and the scapulæ were prominent. In December it had been noted that the static ataxia was well marked. In March of the present year there was slight rigidity and dragging of the right leg in walking with tendency to fall to the right. At the present time the pupils are normal; there is slight oscillation of the eye-balls; slight ataxia of the right upper extremity; muscular power is perfect; the speech is slow and uncertain; there is a tendency to fall toward the left with a paraplegic gait. He stands with difficulty on either leg alone. A specimen of his handwriting was exhibited. During the past year there had been practically only an increase in the cerebellar incoördination and in the defect of speech. The man presented none of the stigmata of hysteria and was in no way neurasthenic. While he did not present all of the characteristics of disseminated sclerosis there were sufficient symptoms present, the speaker thought, to warrant this diagnosis.

Dr. B. Sachs thought there could be no doubt about the correctness of this diagnosis. It seemed to him a good example of the rather rare cerebellar form of multiple sclerosis.

Tumor of the Pons.—Dr. Joseph Collins presented some sections from a tumor of the pons. They had been taken from a woman, about forty years of age, who had gone to a dance on August 24, 1900, feeling quite well. After dancing a short time, the evening being very hot, she fell and remained unconscious for two hours. She said that her head felt heavy and her feet very light. The next morning on attempting to do housework she found that she was very dizzy and that the left side of the body did not seem to be under proper control. During the next three weeks there had been three transitory attacks of unconsciousness. There was in addition pronounced ataxia of the

extremities, but no paralysis. There was also constant vertigo with occasional vomiting, and a feeling of great weakness. She also suffered from a distressing diplopia. After an interval of about a week, during which the symptoms had abated, they had again returned. She had then exhibited inebrious speech and had suffered from nausea on the slightest movement. He had seen her about seven weeks after the original attack, and examination had revealed paralysis of the right abducens and of the right facial, with no reaction of degeneration; slight anesthesia of the upper two branches of the fifth nerve with no involvement of the lower branch; also hemiataxia and an exaggeration of the tendon jerks all over. There was not much headache at the time, and no optic neuritis. The woman died with symptoms of bulbar involvement. The lesion had been diagnosed as an acute softening in the left half of the pons. On autopsy a section through the pons revealed a fluid mass, but no evidence of a tumor or of an increase in the consistency of the pons. It had only been after hardening and cutting the pons that it had been found that there was an enormous angio-sarcoma involving the left side of the pons. It had pushed over the raphe and infiltrated the right half of the pons as well. The explanation of the lack of symptoms that one would expect with such a condition was that the growth had infiltrated between the motor and sensory fibers of the pons, but had failed to destroy them until a short time before the death of the patient. This was entirely at variance with what was usually observed in a growth of this character. Both acoustic nerves had escaped. At no time had there been any disturbance of vision, though careful tests had been made to determine this point.

Dr. M. Allen Starr said that last March he had seen in consultation with Dr. Biggs a patient who had presented rather a similar set of symptoms, namely, diplopia and paresis of several of the ocular muscles on both sides without a typical ophthalmoplegia externa. The patient also had anesthesia of one side of the face, and had the kind of speech often observed in bulbar palsy, together with a marked ataxia. There was no choked disc, so that the question had arisen as to whether the condition was one of softening or of the tumor. In the absence of headache and choked disc he had inclined to the diagnosis of softening, but the autopsy had shown an infiltrating glioma.

Clinical and Anatomical Report of a Case of Multiple Congenital Deformities.—Drs. B. Onuf and J. Fraenkel presented a joint paper, which was read by Dr. Fraenkel. The subject of the report was a girl who at the age of four years had been admitted to the Montefiore Home on September 22, 1895. The condition of the extremities had been noticed immediately after birth, and it was said that convulsions had occurred frequently during the first year. One year and a half before admission an osteotomy had been done at the hospital for clubfoot. During her stay in the Montefiore Home the girl had been frequently examined by various specialists. The child showed normal cerebration, but the emotions were displayed in an explosive manner. The chief features were: Motor disturbance of all four extremities; asymmetry of facial innervation, the face being drawn to the left; atrophy of the muscles of the forearm and fingers; drop-wrist on both sides; decided diminution in the motor power of forearms and hands; absence of the reflexes of the upper extremities; lower extremities decidedly tapering, and the right one the longer; decided diminution of the motor power of the flexors of the leg and extensors of the foot. On attempting to walk, standing erect, an intense lordosis developed, and there was a cock-step gait. The

clinical picture had remained practically unaltered up to the time of her death from diphtheria in June, 1897. The autopsy had been made by Dr. George R. Elliott. There was a subluxation of the hand and forearm forward. The palmaris longus muscle was absent. The ulnar half of the flexor sublimis digitorum was much reduced in volume, while the radial half was composed of fat only. The flexor profundus digitorum was also quite fatty. The flexor longus pollicis was converted into fat and the supinator longus into a band. The muscles of the extensor side of the forearm were all small but were not fatty. The thenar muscles were absent with the exception of the flexor brevis pollicis. There was a dislocation of the left hip upward and forward without any break in the capsule, and the head of the bone was situated forward of the natural acetabulum. The new acetabulum was made up of the thickened capsular ligament, but was otherwise apparently normal in shape. The pelvic and thigh muscles on the side of the dislocation were either fatty or atrophic. Microscopical examination of the psoas and entire muscle mass of the three adductors demonstrated: (1) A reduction in the volume; (2) an increase in the perimuscular fat tissue in some, and interfascicular fatty tissue in others at the expense of the muscular tissue proper; (3) increase of the perimuscular fat, chiefly in the adductor group of the left thigh; (4) increase of the fibrous connective interstitial tissue; (5) a vascular change, chiefly a thickening of the vessel walls; (6) disintegration of muscle fibers in some muscles; (7) preservation of a relatively large number of muscle-spindle-cells in the affected muscles; (8) changes in the intermuscular nerve bundles, chiefly a scarcity of the nerve fibers and thickening of the perineurium. No less than 44 spinal nerve roots were examined microscopically and changes were found not only in many anterior, but also in many posterior roots. The spinal cord on gross examination showed an unusually meager development of the cervical and lumbar enlargements. Microscopically there were noted: (1) A shrinkage of the nerve cells of the anterior horns in most levels of the spinal cord; (2) a shrinkage of the cells of Clarke's columns in certain levels; (3) vascular changes and cavities in the gray matter, chiefly in the cervical and dorsal regions; (4) the presence of apparently undeveloped cells at certain levels; (5) proliferation of the ependyma of the central canal in certain regions; (6) changes in the white matter, probably by artefacts. On gross examination the brain exhibited nothing peculiar. Changes of an atrophic order and apparently the presence of certain cells in an embryonic state were noted on microscopic examination. The cells most frequently affected were the larger pyramidal cells. No vascular changes were noted. To give some idea of the minuteness and exhaustiveness of the examination made of this case it should be noted that 5,500 sections were made and prepared for examination.

Dr. George R. Elliott presented the right forearm and the pelvis of this child, and demonstrated some of the muscular peculiarities noted in the report. The head and shaft of the dislocated bone, he said, were normal except that they were small from disuse. The dislocation was upward. The speaker emphasized the fact that this was not the form of dislocation known as a congenital dislocation of the hip; true congenital dislocation of the hip was almost invariably backward on the dorsum of the ilium. The large ligamentum teres seemed to be only a physiological hypertrophy. There was nothing in the drop-wrists to warrant them being called congenital dislocations; they were rather the result of the pareses. With reference to the

peripheral theory, Dr. Elliott said he could not quite understand how this would explain the picking out of portions of muscles and having them replaced by fat while others remained absolutely normal.

Dr. B. Sachs said that having seen the child during life he never doubted that the diagnosis lay between an intra-uterine poliomyelitis and a developmental defect. The paralytic conditions were secondary to the central change. In spite of the elaborate investigation that had been made the report was not wholly satisfying as to the character of the process. It did not seem to him that developmental defect of the gray matter of the cord could be excluded by the findings reported. It would have been interesting to follow up the anterior spinal artery and determine if this vessel were properly developed and had functionated properly. If it had not been normal, almost all of the changes in the gray matter described in the report could have been easily explained in that way. The case seemed to him to offer an example of a possible arrest of the development of the gray matter of the cord. He would like to know whether any unobjectionable case of intra-uterine poliomyelitis had been reported.

Dr. V. P. Gibney said that, so far as he knew, this was the first case of intra-uterine poliomyelitis that had been reported. In various discussions on clubfoot the subject of intra-uterine poliomyelitis had been pretty effectually disposed of. He agreed with Dr. Elliott that the dislocation in this case was not a true congenital dislocation of the hip.

Dr. Joseph Collins said that, judging from the report, he would not be satisfied to admit that the case was one of infantile poliomyelitis, because nothing had been said regarding the changes in the substance of the cells as evidence that these cells had undergone the parenchymatous changes which cells do suffer in poliomyelitis of every kind. He understood that the reason these changes had not been described was because the specimens had not been properly hardened for the Nissl stain. This was a great obstacle to the acceptance of the statement that the lesions were dependent upon a poliomyelitis. In poliomyelitis of every kind the external contour of the cord does not change, yet in the case reported shrinkage of the cord was prominent. Again, the cells were reported to be quite scarce, but the cells themselves were not materially disintegrated as should have been demonstrable in specimens so prepared. He found it impossible to imagine that this perceptible decrease of cells in size and shape in the motor region was purely secondary to the smallness of the cells in the cervical and lumbar regions. The changes in the muscles seemed to indicate very distinctly that they were secondary to central changes.

Dr. B. Onuf closed the discussion. He said that he thought that even if the anterior spinal artery had been badly developed it would not explain why the changes observed were so much more marked in some regions than in others. The intramuscular nerve bundles appeared degenerated. If there had been a developmental defect in the spinal cord one would look for absence of certain nerves and expect the rest to appear normal. In his opinion, the changes found in this case were fairly typical of poliomyelitis. The number of the cells appeared, on the whole, to be diminished. If this were a case of intra-uterine poliomyelitis it was probable that comparatively few lesions would be found so long afterward as evidence of the process that had taken place. The changes of contour were probably explicable also on the ground that the process had lasted long. The distribution

of the cell changes was far from being uniform. He saw no reason why the cortical changes should not be looked upon as secondary in view of the fact that the process must have occurred very early in life. In cases of congenital porencephalus of the right occipital lobe marked atrophy of the optic nerve had been observed and reported. In a case of this kind it was not right to draw conclusions from one or two points, but only after a careful study of the whole picture.

The Finer Microscopical Structure of the Cortical Areas in Man and Some Animals.—Dr. M. G. Schlapp made some remarks on this subject. He said that he had been struck with the great differences in the descriptions of the cortex as given by different writers. The earlier authors described five or six layers in the occipital lobe, whereas more modern writers described eight or even nine layers. These discrepancies he would explain by the fact that different animals had been used for their observations. The higher one goes in the animal kingdom the more the phylogenetic secondary center tends to replace the phylogenetic primary center. The secondary center does not control all movement, however. Plates were exhibited to show the differences in different animals. The motor area is not developed in the lower animals, so that it can be distinguished from the rest of the cerebrum, but such an area can be observed in the dog and monkey. In the dog it is very near the frontal pole, whereas in the monkey it is much further back. In the monkey is found an eight-layer structure. The cortical sight center is very much developed in the monkey and in man. These differences in structure were demonstrated under the microscope. The granule cells are characteristic of a highly-developed cortex. Most of these cells have ascending axones or very short axones. They are the cells which receive the impulses. These cells are very much more developed in the sensory than in the motor areas. In the sight center is found the eight-layer type. The auditory center can be recognized, but is not so sharply distinguished as is the sight center.

CHICAGO NEUROLOGICAL SOCIETY.

October 24, 1901.

The President, Dr. Hugh T. Patrick in the chair.

Bitemporal Hemianopsia.—Dr. H. Gradle presented a patient with bitemporal hemianopsia and discussed the probable site and nature of the lesion causing the symptom.

Myasthenia Gravis.—Dr. H. T. Patrick presented a patient who was believed to have myasthenia gravis. He was a negro (not pure) twenty-five years of age, a cooper, and had been practically well until five years ago, when the present trouble began. He first noticed weakness of the arms when at his work, which weakness soon involved the legs and was accompanied by a dull ache or feeling of intense fatigue. He early noticed that a short rest would relieve the symptoms, which would then reappear after a few minutes of work. He gradually grew worse and had been able to do no work whatever for three years. The most striking symptom was a generalized myasthenic condition present to some extent at all times but enormously increased by a short period of activity. For instance, after a rest he could start off at a brisk rate and with almost a normal gait, but would rapidly weaken, and after walking about a block be compelled to come to a standstill. After a short rest he could again proceed as before. There was no particular involvement of limited groups of muscles as has been the rule in reported cases. The muscles about the shoulders and neck and the pelvo-femoral group seemed to be weaker than others, but the eye muscles, face muscles and muscles of mastication, although not vigorous, were not weaker than those of the extremities. The myasthenic electric reaction was present to a very limited degree, and the deep reflexes also showed some slight exhaustion after being rapidly elicited twenty or thirty times. As the blood, urine, feces and all the thoracic and abdominal organs were normal, and there were no conclusive evidences of organic involvement of the nervous system, the author was driven to a diagnosis of myasthenia gravis.

Lesions of the Conus Medullaris and Cauda Equina.—Dr. Bertram W. Sippy said that the symptoms produced by these lesions are well defined; but may be readily overlooked unless one is familiar with the clinical picture produced.

It is desirable both clinically and anatomically to limit the conus medullaris to the third, fourth and fifth sacral and coccygeal segments. Disease of those segments of the cord show characteristic sensory and motor disturbances. Sensation is impaired in an area symmetrically distributed involving the integument of the penis, scrotum, perineum, anus, inner aspect of the buttocks, and posterior surface of the thighs. The sensibility of the mucous membrane of the penis and rectum may also be dulled. If the lesion is sufficiently destructive, the muscular power of the bladder and rectum may be seriously impaired, sexual power may be lost and bed-sores may develop.

Lesions of certain fibers of the cauda equina may produce a clinical picture very similar to that of conus disease. It is extremely important to be able to recognize and differentiate the two conditions, since caudal disease may often be amenable to surgical treatment. Dr. Sippy reported nine cases in which one or the other of these structures was involved. The lesion included focal myelitis, tumor of the conus, spinal column injury, tumor of the vertebræ, and tuberculous

spondylitis. The symptoms of the conus lesions were observed in one case of tabes. Autopsy was held on the case and tumor of the conus was found.

The areas of anesthesia in those cases in which the adjacent cord was involved showed a striking similarity, and did not correspond accurately to the areas previously mapped out by others who have contributed to the subject of spinal localization. The general resemblance, however, was very close.

A few of the more important points given in differential diagnosis between diseases of the cauda equina and conus medullaris were: Except when due to trauma, disease of the cauda usually develops slowly, producing symptoms more or less characteristic of "root diseases." Pain upon movement is first felt in the lower extremities. Later the pain becomes spontaneous and persistent with exacerbations. Subsequently, anesthesia develops. If the lesion is uniform compression of the cauda, the cutaneous distribution of its central fibers are the first areas affected. Bladder and rectum symptoms may appear early, and are usually present before anesthesia becomes pronounced. Motor weakness is present in proportion to the pressure on the motor fibers and as a rule, does not appear until pain has become a prominent feature. The paralysis is characterized by loss of muscular tone. At onset, reflexes may be exaggerated; later, they are lost. Atrophies may develop. The electrical reactions may be altered. Decubitus has been noted. Disease of the conus is characterized by the sensory and motor symptoms previously described. In addition, the symptoms are likely to develop rapidly. Sensation may not be disturbed alike for all qualities. The pain and temperature sense is likely to be more seriously affected than touch sense. Pain is absent. Decubitus is more likely to occur than in caudal disease. Above all that which characterizes disease of the cauda, is pain. In a given case the absence of pain speaks directly for the conus lesion.

In the discussion which followed Dr. Patrick's paper, Dr. Lodor inquired of the mental condition of the patient, as to whether speech was slow and intellection sluggish. Dr. Sippy asked whether there were not present some symptoms of Addison's disease and whether the tension of the pulse had been noted. Dr. Goodkine called attention to the fact that no mention was made of the condition of the patient's voice.

In reply Dr. Patrick stated that while the man's voice was not strong and speech was slow, intellection seemed normal, and that there was no bronzing of the skin discoverable, and the pulse was soft and normal.

In discussing Dr. Sippy's paper, Dr. Kuh said that in all acute cases of segmental cord lesions low down, the diagnosis was made from symptoms as given at the outset, and was very usually wrong, as the symptoms at first indicated a larger lesion than subsequently appeared. In making a differential diagnosis between conus and caudal lesions it is important to remember two symptoms, pain and disturbances of motility. In conus lesions there is less pain and more disturbance of motility, while in lesions of the cauda equina, the reverse is true.

Dr. Barker asked Dr. Sippy whether in his different cases, the overlapping of the terminal cutaneous nerves could be demonstrated. Dr. Sippy replied that while each area of skin contained fibers from the separate segments of the cord, the overlapping was in the roots and not in the segments. He also stated that disturbances of pain and temperature were more sharply outlined than touch.

Dr. Patrick cited two cases where the anesthesia was found on the back of the leg in a continuous strip.

Periscope.

Brain.

1901, Vol. 24, Autumn.

1. Certain Mental Changes that Accompany Visceral Disease. HENRY HEAD.
2. Contribution to the Study of the Cortical Sensory Areas. G. L. WALTON-W. F. PAUL.
3. A Case of Chronic Internal Pachymeningitis of the Spinal Cord. J. MICHEL CLARKE.
4. Degeneration in Hemiplegia; With Special Reference to a Vento-Lateral Pyramidal Tract, the Accessory Fillet and Pick's Bundle. STANLEY BARNES.
5. On the Study of True Tumors of the Optic Nerve. PROF. A. PICK.
6. A Case of Cerebral and Cerebellar Tumors with Well-defined Tract Degenerations. F. THIELE.

1. *Certain Mental Changes that Accompany Visceral Disease.*—Henry Head analyzes the various mental changes accompanying visceral diseases, as based on investigations of patients suffering from pulmonary, cardiac or abdominal disease, embracing observations made in the Victoria Park Hospital, and the London Hospital since 1893. The underlying etiology of such changes is to be looked for either (1) In a disturbed activity of the heart altering the circulation of the brain, or changing the character of the blood supplying it; as an example of this we find the delirium that accompanies a failing heart or profound vascular degeneration; or (2) when an organ is attacked which in health produces a substance necessary for the normal metabolic activity of the tissue; thus the destruction of the thyroid gland causes the peculiar hebetude of myxedema, due to the absence of some constituent manufactured by that gland. (3) When an excreting organ is attacked, leading to retention of toxic agencies in the blood, as we find in kidney and liver troubles. (4) The resistance of the nervous system may be so lowered by visceral disease that a poison, such as alcohol, for instance, may produce mental changes different from those that will be produced by the same poison under different conditions. (5) Finally, visceral disease may, by lowering the resistance of the body to disease, call out dormant tendencies manifesting themselves as active mental disease. Besides, the reflected pains of visceral diseases are accompanied by changes in consciousness. The various changes that may accompany visceral disease fall into the following groups: (1) Hallucinations: (a) of vision; (b) of hearing; (c) of smell. (2) Moods; (a) sense of ill-being; (b) exaltation. (3) Suspicion.

As regards hallucinations of vision the commonest form is that of a figure, usually draped, and not clothed, "wrapped in a shawl," as the patients declare, "wrapped in a sheet," the limbs are usually not visible. Sometimes the hallucination consists of a face only; in one case the patient saw a hand and arm come round the door of the ward that stood open flush with her bed. The hallucinations are in all cases white, black or gray, never colored or even normally tint-

ed. The face is white, the lips colorless, thus giving rise to the figure or face of a corpse. In this he finds the difference between the hallucinations of the sane to those of the insane, for in the latter the hallucinations of vision either resemble some normal subject or are highly colored, although the other kind of hallucinations may also be present. The figure or face is always single; it is usually stationary, unaccompanied by any sound, not appearing during the bright light of the day, but usually when the patient awakes from sleep. The patients are at first frightened, but become gradually accustomed to the phenomena, and insist they won't "be fooled"; at times they are accompanied by depression, and considered as a bad omen of some approaching misfortune.

The hallucinations of hearing are also of a simple type; they are never articulate voices, thus differing from the commonest form of hallucination of hearing in the insane. They assume the form of tapping, of ringing bells, low whistling, treading of footsteps, or breathing and inarticulate whispering. The intensity of these hallucinations is very variable; they also occur usually at night, and when the patient is surrounded by perfect quietude, for external noise tends to prevent the appearance of the hallucinations. The feeling—tone—of the patient caused by these hallucinations is usually unpleasant, and the latter are quite persistent. The investigation of hallucinations of smell is very difficult, as you cannot easily prove that a smell of which the patient complains has no external cause. These hallucinations are invariably unpleasant, and may be divided into the following groups: (a) Sulphuretted hydrogen group ("drains," "rotten fish," "eggs," or "cheese"); (b) burning group ("burning bricks," "burning rags"); (c) "earthy smell," or "smell of grass"; (d) smell of gas; and (e) fecal (only one case). Like other hallucinations these are prevented by strong external scents. They frequently appear in relation to food, thus causing refusal of food by the patient.

(2) Moods.—(a) Sense of ill-being. The change of mood in these patients comes in paroxysms, without reason, the patient seeking solitude, away from public gatherings, which become repulsive to him; he usually has an intense desire to weep; when spoken to he completely breaks down, nor can he tolerate music or anything that usually tends to cheer up a healthy man when in despair. This is accompanied by a vague idea of impending ill. He visualizes his home through dark colors. Still this mood is seldom followed by an idea of suicide; on the contrary the patient usually spurns the idea of self-destruction. (b) Exaltation. Quite to the contrary is the feeling of exaltation, a feeling of returning physical strength; the illusion is, however, rapidly dispelled by the failure to accomplish feats of strength not commensurate with the real strength.

(3) Suspicion. The mood of depression frequently repeated or lasting too long merges finally into a condition of suspicion, which, however, is more of an impulse than a formed delusion, for the patient at all times recognizes that it has no basis of truth; this suspicion is also easily dispelled by appropriate explanations.

In analyzing the causes that underlie the above-described phenomena, the author ascribes the most prominent rôle to the presence of reflected visceral pains accompanied by superficial tenderness. (An attached chart of 154 cases, embracing those of aortic disease, aneurism and dilated aorta, mitral disease, combined aortic and mitral etc., as well as of tubercular phthisis, fibrosis of lungs, etc., is well worthy of the closest study at this juncture). Thus the condition of depression is not an intellectual sense induced by

thought and worry to the patient's mind, but an alteration of the feeling-tone in the direction of ill-being; and associated with a sense that it lies outside reason; as he describes it, it is an obsession dominating his rational life and producing feelings that he cannot describe. He has a feeling that he has somehow lost control of his mental processes but that his reasoning powers are still intact. This feeling of ill-being is not an emotion proper, for it is not accompanied by projection, as in anger, hate, love and the like; and in the absence of a suitable English psychological term he proposes to call this state "mood", to indicate a state of mind in which consciousness is dominated by feeling-tone, but where the resulting state is not projected. To produce such a mood the reflected visceral pains must not only be of considerable intensity or duration, but great frequency and involve a number of segmental areas. Then some segmental areas—as those of the abdomen—are more likely to be associated with this sense of ill-being, while pain and tenderness over the upper thoracic area must be relatively severer and of longer duration before it becomes associated with depression. Instances of cardiac pulmonary trouble are here brought forward to substantiate this assertion. The feeling of exaltation spoken of before is not a delusion of grandeur, but a belief in the returned youth and strength, thus becoming the exact converse of that sense of ill-being which made up the depressed mood. This comes as a reaction after diminution of pain. The duration of this state is usually short, and it must not be confounded with the well-known "*spes phthisica*," a more permanent mental condition of a different origin and nature, for this hopefulness, this condition of rescience, is based simply on ignorance of the increasing gravity of the signs of the disease, and is easily dispelled by a short stay in the hospital. As distinct from this exaltation there occur attacks of excitement, when the patients burst out into paroxysms of anger or uproarious excitement, as instances in cases of aortic disease. It would thus seem that the exalted sense of well-being to which persons with visceral disease are liable, may arise from many different causes. (a) It may be the direct contrast to a mood of ill-being induced by visceral pain. (b) Those who suffer from visceral pain are liable to an accentuation of the normal waves of well- and ill-being that apparently stand in connection with the feeling-tone connected with visceral activity. (c) The apparent exaltation may be due to ignorance on the part of the patient of the gravity of his condition. To this group belong many of the cases of so-called "*spes phthisica*." (d) Patients suffering from disease of the aortic valves are liable to attacks of excitement apparently of vascular origin. The state of suspicion usually takes its origin from the state of ill-being or depression; with them there is also associated a sense of physical worthlessness, but no feeling of moral unworthiness, and thus it fundamentally differs from the commonest form of suspicion to the insane, who always thinks that those around him believe he has committed some act either against religion, law or social custom; again the patient with suspicion born out of a sense of ill-being of visceral origin is without difficulty convinced of the suspicion being without foundation, nor is he quite sure of the suspicion; a simple denial satisfies him. In its causeless or inconsequent onset, and to the sense of loss of control by which it is accompanied, it closely resembles the state of ill-being out of which it springs. Hallucinations mostly appear in cases of depression except those of vision, which are not always contemporaneous with an attack of depression. (Reference is here made to an article by

the author in "Brain," 1894, p. 436, touching upon the anatomical causes that underlie the reflected pain in the head and tenderness of the scalp in diseases of the organs of the chest and the abdomen.)

In attempting to bring out the causes that determine the special kinds of hallucinations—of sound, sight and smell—and taking as an example headache of the reflected visceral type, he propounds several theoretical considerations: the presence of pain of the reflected type and tenderness over the temporal area, whatever its origin, will tend to produce an hallucination of smell. Widespread scalp tenderness unaccompanied by marked local headache, is unlikely to be associated with the occurrence of an hallucination. The occurrence of hallucinations of vision and hearing on the position of the headache or the area of the scalp tenderness.

(3) Changes in attention and memory. Memory for the remote past is usually not affected except in those extreme cases where the patients become slightly demented. If a man has a special facility based on some particular development of memory, this aptitude is the first to be weakened. Then memory may also be weakened in other directions, patient may forget things seen or heard—a more serious condition, but there is no loss of due appreciation of time and of locality as in the insane. A profound loss of attention has also been observed in many suffering from diseases of heart and lungs. These changes cannot be ascribed to reflected pain only, but with this is usually associated acute wasting and fever. Pain sensations do not cause a diminution in the power of attention only by the fact that they enter into consciousness as pain sensations, but by changes in feeling-tone with which that pain is associated. In visceral disease it is not only from lack of attention that memory is diminished, but from the lowered vitality of the nervous system produced by continuous fever or profound wasting. Besides, states in which feeling-tone or motion occupy consciousness are extremely poor in memory images. In a similar manner few can reproduce the sensation of a toothache, although every object in the dentist's room can still be pictured as clearly as on the day the tooth was drawn. The article concludes with an extensive appendix of cases illustrative of the various mental changes accompanying visceral diseases.

2. *Contribution to Study of Cortical Sensory Areas.*—In this article, which is rather too technical to be summarized, the authors present "a view in line with that of Bastian, in that it accords a sensory function to both the Rolandic and to the parietal regions, and recognizes the gyrus fornicatus as a possible sensory seat."

3. *A Case of Chronic Internal Pachymeningitis of the Spinal Cord.*—J. M. Carke presents an interesting case of extensive internal pachymeningitis, absolutely limited to the spinal cord, without any involvement of the intracranial membranes. The patient, a man of twenty-five, a shepherd, free from syphilis or gonorrhea, was suddenly taken sick eighteen months previous to admission to the hospital, with severe pains and loss of power in the legs, extending—the pains—into the ankles, knee-joints, wrists, elbows and shoulders; pains worse at night and after exertion; occasionally incontinence of urine; some tremor in the limbs, and some fibrillary twitching of the muscles; unable to stand, and when assisted just shuffled along a few steps. Speech and answer slow, but appearance and well-being good; over ventral area rough systolic murmur. Cranial nerves unaffected; arms weak but not paralyzed. Legs weak, muscles somewhat wasted, toes extended, dorsiflexion of foot feeble, flexion weaker than extension. Some lordosis and stiffness in movement of lower dorsal lumbar por-

tion of spine. Abdominal and cremasteric reflexes absent, plantar present; knee-jerks exaggerated, ankle clonus absent; elbow- and wrist-jerks present. Retention of urine with overflow, incontinence. Severe girdle pains. Later on wasting of the muscles of leg and bedsores. Hyperesthesia at the level of the umbilicus, over front of thighs and legs, and over calves. Anesthesia over dorsum of the feet and outer aspect of legs; also, in patches, over the trunk. The temperature sense defective or lost in places over the lower extremities, also some deficiency in tactile sensations. In a week or so loss of power in both lower extremities which were rigidly contracted and flexed at all joints, further wasting of the muscles with no reaction to faradic current. Pains and girdle sensation very severe. Then tingling and numbness in the right arm, entire loss of power; the other arm involved. The patient during the last week became absolutely helpless, unable to move himself; legs rigid, wasted, drawn up, right arm flaccid, left arm very feeble, turning head and neck very feebly. Incontinence of urine and feces. Abdomen distended, tympanitic from paralysis of abdominal muscles. Rapid formation of bedsores over every bony point on which there was the least pressure; sacrum, trochanters, belly, great toes, etc. Death from septicemia.

Post-mortem: skull normal, cranial dura healthy, pia-arachnoid a little opaque, cerebro-spinal fluid in excess, cerebral hemisphere small but healthy, but ventricle much dilated, ependyma somewhat thickened. Cerebellum and pons healthy. But in the cord remarkable changes were found. In its whole length it was enclosed in a tough fibrous sheath, consisting of thickened dura mater and within this a thick layer of looser connective tissue; all this firmly adherent to the cord. The thickening lessened gradually at the upper part of the cervical region and in the dorsal and lumbar. The cord itself appeared small and compressed. Sections of the cord showed under the microscope that the mass consisted of the greatly thickened dura, and of closely applied layers of dense fibrous tissue. Next to the cord was a very vascular layer, looser and less dense in texture; beneath this the pia, thickened and with vessels injected. Both roots of nerves were compressed, and largely destroyed. The posterior root ganglia atrophied, the ganglia cells destroyed. In the cord itself there was a diffuse degeneration of quite irregular distribution due to increase of interstitial neuroglial tissue and atrophy of nerve fibers. In the gray matter there was a diminution in the number of fine, large medullated fibers normally present. There was a marked general increase of the interstitial tissue both in the gray and in the white matter. The blood vessels also showed changes in that their walls were markedly thickened, the chief change being in the inner coat with marked endarteritis.

Although syphilis presents similar changes, it usually affects a limited portion of the cord, while here the whole of the cord was implicated. The changes themselves seemed to be secondary, due to compression. There was no evidence of a primary myelitis. The negative history as regards syphilis and the absence of other syphilitic lesions in the body speak against the syphilitic origin of the disease. In the course of the malady it is worthy to note that the pain and weakness in the legs came on rather gradually, remaining almost stationary after reaching a certain stage, but two months before death these symptoms grew rapidly worse, and the subsequent progress of the illness was very rapid. The extraordinary formation of bedsores was a remarkable feature of the disease.

4. *Degenerations in hemiplegia.*—This is a study based on the autopsies of five cases of hemiplegia and aphasia with the following conclusions: (1) In man the pyramid frequently gives off a ventro-lateral tract. This tract may arise in the pons, medulla or first cervical segment in the cord; it lies in the region of Helweg's "Dreikanntenbahn," and is best marked in the first two cervical segments; occasionally it can be traced down to the lumbo-sacral region. (2) It confirms in the main, the researches of Hoche on the "accessory fillet" in man, *i.e.*, that it leaves the pyramid in the upper pontine region, descends in the middle fillet and supplies certain of the cranial motor muscles. (3) "Pick's bundle" is probably an ascending tract which arises from the crossed pyramid at the decussation, and forms at least part of the pyramidal supply of the nucleus ambiguus; it is fairly frequently degenerated in cases of hemiplegia, and is not of such rare occurrence as Pick supposed.

5. *On the study of true tumors of the optic nerve.*—At the autopsy of a case that presented during life a complexity of eye symptoms (especially pronounced atrophy of both optic nerves) in combination with mental symptoms, such as hallucinations, restlessness, etc., due to an injury five weeks before to the left temporal region sustained by striking violently against a broad wooden peg in a stable,—the optic nerves were found markedly gray in color, although not diminished in size; microscopically beside numerous round cells, peculiarly-shaped bodies of varying size furnished with long processes; the sheath of the optic nerve considerably thickened. There were on one hand masses of round cells, and on the other typical or angular cells of myxoma with often extraordinarily-long spirally twisted processes thus marking the tumor as a myxo-sarcoma. The special points in the case are summarized thus: Tumor of the optic nerve was not diagnosed, the symptoms not being clear enough, and exophthalmos (which, according to Braunschweig, is "never" absent) not being present. The early development of visual defects is a factor of importance in the diagnosis of such cases, even where palpation gives no evidence of a tumor and exophthalmia has not developed. The etiological impetus as well as the rapid course of the disease are also matters for consideration. The author is compelled to accept the origin of the tumor at first in the chiasma, thence as spreading in both nerves and into the tract. As regards the mental symptoms, the psychoses are essentially based on hallucinations of sight, probably due to the pressure of the growth. The epileptic attacks that occurred two days previous to and on the day of patient's death, are ascribed to a disturbance of the state of circulation in the dural sheath of the optic nerves compressed from within outwards.

6. *A case of cerebral and cerebellar tumors.*—At the autopsy of this case (a child, six years old, who fell, striking the occiput against a curb stone, some five weeks previous; this was followed by "fits," and later on by complete blindness, "cerebellar" gait, double optic neuritis, etc.) tuberculous tumors were found in the left parietal lobe, in the superior temporal convolution and in the left lateral lobe of the cerebellum. Microscopically there were degenerations of fine collateral fibers in the corona radiata of the parietal lobe of the left hemisphere, in the corpus callosum at the level of the middle of the third ventricle, the fasciculus subcallosus in the left hemisphere, the temporo-thalamic fibers, the pyramidal tracts (the lower limb area), in the accessory fillet; extensive degenerative processes were also found in the optic tracts, the posterior commissure, the posterior

longitudinal bundle. In the spinal cord in addition to the pyramidal degeneration both columns of Burdach were affected. In the cerebellum both flocculi were attacked, the uvulva, the inferior vermis as well as the fleece fibers around the dentate nuclei of the cerebellum. Both superior cerebellar peduncles were degenerated, especially on the left side.

The following conclusions are drawn from the case: (1) With destructive lesion of the cortex of the Rolandic area (a) the association fibers of the homolateral hemisphere undergo extensive degeneration; (b) the fibers of the corpus callosum connecting the two areas are of medium size and do not turn down into the capsule of the opposite hemisphere; (c) the pyramidal fibers give off collateral to their course through the corona radiata; (d) the fibers from the upper third of the Rolandic area run through about the junction of the middle posterior third of the hinder limb of the internal capsule and for the most part to the outer side of the crista of the peduncle and maintain their relative position in passing through the pons. (2) No fibers are given off by the optic tract to the infundibular region or to the corpus Luysii, in fact no fibers leave the tract before it reaches the level of the lower border of external geniculate body. This is contrary to the views of Bechterew, Stilling and Kölliker. (3) although there was widespread destruction to the left lobe of the cerebellum there was no descending cerebellar degeneration to the spinal cord. This is contrary to the opinion of several authorities e.g., Marchi and Biedl; but inasmuch as Deiters' nucleus was intact the present observation supports the views of Risien Russell, and Ferrier and Turner; (4) the accessory fillet is a descending tract contrary to the opinion of Bechterew, Schlesinger, and in support of the view of Redlich and Hoche. The "accessory fillet" may be simple fibers of the pyramidal tract leaving to gain cranial nerve nuclei.

ROVINSKY.

Neurologisches Centralblatt.

(1902, Vol. 21, January 1, No. 1.)

1. Initial Symptoms of Paranoia. A. PICK.
2. Dietetic Treatment of Epilepsy. D. SCHAEFER.
3. Studies in Voltaisation. A. ZANIETOWSKI.

1. *Initial Symptoms of Paranoia.*—This is merely a short controversial article calling into question a few of the conclusions reached. Head in his article on "Certain mental changes that accompany various cerebral diseases," an abstract of which appears in this issue of the JOURNAL.

2. *Dietary Treatment of Epilepsy.*—A short note in favor of a strict dietetic treatment of epilepsy paying particular attention to a diet which is free from chlorine combinations as first laid down by Toulouse and Richet. Brief summaries of the results are given in three cases. Balint's diet, consisting of 1½ liters of milk, 40-50 gms. fresh butter, three eggs, 300-400 gms. of bread, was employed. The attacks steadily diminished in number and the psychical condition was markedly improved. A return to the ordinary diet was accompanied by a return of the epileptic attacks.

3. *Studies in Electrophysiology.*—The author here gives a short summary of his results obtained by the use of the Voltmeter instead of the Galvanometer as a reliable test for electrical excitability. Such an instrument he believes to be better for the measuring of viability of nerve and muscle action than the use of the constant current :

the needle of the galvanometer. The notes are concerned mainly with technical questions of the different forms of apparatus used. The results are distinctly new, however.

JELLIFFE.

The Alienist and Neurologist.

(1902, Vol. 23, No. 1, Jan.)

1. The Acquirement of Nervous Health. F. SAVARY PEARCE.
2. Manual Stigmata of Degeneration. J. E. COURTNEY.
3. Sexual Inversion among Primitive Races. C. G. SELIGMANN.
4. Juvenile Female Delinquents. E. S. TALBOT.
5. Clinical Observations on a New Hypnotic. H. SCHOENFELD.
6. Medical Aspects of the Czolgosz Case. C. H. HUGHES.
7. L. F. Czolgosz. A. DRÄHMS.
8. Consciousness and the Neural Structure. J. G. KIERNAN.
9. Science and Christian Science. P. PAQUIN.

1. *Acquirement of Nervous Health.*—A few cases are here reported bearing on what the author is pleased to call the stress of modern civilization as causative factors in the production of nervous diseases. He concludes with a few truisms that many mental diseases have perverted functions as a basis for development and advises short vacations, trips on the water, canoing, horseback riding, etc., as aids to overcome general nervousness which may precede serious breakdown.

2. *Manual Stigmata of Degeneration.*—A short note on certain irregularities in the structures of the hand. Such enumerated are stub-thumb, or abbreviation and clubbing of the last phalanx of the thumb; spur-little finger or marked shortening of the little finger with or without deflection downward of the last phalanx and infantile nails, the nails being short, small, thin and disposed to flare and curl at the edges.

3. *Sexual Inversion.*—Among primitive races little is known of the details of these practices. It is known that homo-sexual practices are present in most of the American Indians; sodomy was found among the Aztec and Maya natives. Among the Aleuts of Alaska, boys of girlish appearance are brought up as girls and decorated as women. Other isolated instances are written, but little new is to be found recorded.

4. *Juvenile Female Delinquents.*—This continues a previous article giving the histories of a few female delinquents, with remarks on the cause of the development of crime among females. A complete analysis will be given at the termination of the article.

5. *A New Hypnotic.*—The author reports the histories of a series of cases in which hedonal was employed to advantage. It is commonly given in doses of from 15-45 grains in mild cases of agrypnia. If there is pain associated with insomnia its action is not reliable and must be combined with a mild analgesic. The sleep obtained is uninterrupted, quiet and dreamless, and lasts for several hours. The observations here quoted were made in von Ziemssen's clinic at Munich, and represent a large variety of cases of insomnia. No serious by-effects or after effects were noted.

6. *The Czolgosz Case.*—This article is a criticism of what the author terms the "too hasty vengeance" of the people on the "degraded assassin," and also an inquiry into the causes that surrounded the criminal which induced him to commit the homicide. Egoism, unbounded and morbid, are ascribed to Czolgosz and sequestration of cranks is advocated.

7. *Bertillon System of Identification*.—A copy of the Bertillon card of Czolgosz with a few personal generalizations.

8. *Consciousness and Neural Action*.—A short essay touching on some material sides of this philosophic problem.

9. *Science and Christian Science*.—A vigorous exposé, now somewhat threadbare of the inconsistencies and money-making schemes of this latest development of pseudo-religious mania. CLARK.

Journal de Neurologie.

(1901, Vol. 6, Nos. 24, 25, Dec. 5, Dec. 20.)

1. Phenomenon of Charles Bell in Peripheral Facial Palsy. BOUCHAUD.

2. Traumatic Paraplegia. M. DE BUCK.

3. Contribution to the Localization of the Cervical Cord. PARHON AND GOLDSTEIN.

4. Case of Labyrinthine Vertigo Cured by Electricity. LIBOTTE.

1. *Bell's Palsy*.—In 1897 Bordier and Frenkel described in facial palsies of the peripheral type, a movement upward and slightly outward of the eyeball, on the affected side on attempting to close the eyelids. (Described by Charles Bell in 1823.) This was observed only when the reactions of degeneration were complete, absent when partial. Hence they assumed it possessed a certain prognostic value as well as diagnostic, being absent in the cerebral type. It occurs normally, if while effort is made to close the lids, the upper is held open with the thumb, and according to Bordier in sleep, nausea, and syncope. Dr. Bouchaud's patient was a woman aged twenty-six years with atrophy of the right lower extremity due to acute poliomyelitis in early life. She incurred a complete paralysis of the left side of the face from exposure to cold. Two months previously she had suffered with pain and tinnitus in the left ear, with slight deafness which symptoms had disappeared before the advent of the paralysis. Six months later Bell's symptom was first sought. Instead of the eye-ball rolling upward and outward, it took its course downward and inward, more rarely downward and a little outward, the cornea disappearing beneath the lower lid. This peculiarity was present in the right eye as well. It persisted even after the disappearance of the palsy and the onset of the secondary contractions. Bordier attributed Bell's sign to a labyrinthian irritation. Campos ranks it with the consensual movements. Bouchaud offers no explanation for this reversal of the well-known phenomenon. It is interesting to note that the same deviation was noted in a case of advanced locomotor ataxia with no evidences of facial weakness.

2. *Traumatic Paraplegia*.—A field laborer, while lifting a heavy spadeful of earth, felt a sudden crack in the right hip with immediate pain and paralysis in the right leg. He could walk only by the use of a crutch and cane. The leg is held flexed, the foot is rotated outward. The entire right leg became atrophic and flaccid, weak movements may be carried out. There was slight diminution of the pain and temperature sense of the entire right leg and in the sciatic distribution of the left. Sphincters were normal. There was pain and tenderness in the region of the right buttock and Pouparts ligament on the same side. Above the latter a tumor was palpable (extirpation later showed enlarged lymphatic glands). An X-ray of the pelvis was negative. Hip-joint was normal. An electrical examination showed a diminution in the response to both currents applied directly and indirectly on the right side and limited to the sciatic distribution on the

left. The knee-jerk was abolished on the left side and was exaggerated on the right side. Both Achilles jerks were absent. The man had a dorsal kyphoscoliosis the result of Pott's disease in his seventeenth year. Dr. De Buck thought that an injury to the right sacro-iliac joint implicating the lumbo-sacral plexus was the most rational diagnosis notwithstanding the bilateral involvement of the extremities.

3. *Contribution to the Localization of the Cervical Cord.*—The results, obtained by the authors, are based on a careful study of the anatomy of the cell groupings in the eight cervical and the first dorsal segments from a normal cord. A case of infiltrating carcinoma of the anterior thorax, axilla and arm, producing a lesion probably equivalent to a resection of the brachial plexus. Animal experiments were also employed. The authors felt justified in formulating the following conclusions. (1) The brachial plexus begins at the upper portion of the 4th cervical segment and terminates at the lower portion of the 1st dorsal segment; (2) the antero-internal group of cells does not enter into the formation of the plexus which supplies the muscles of the vertebral column; (3) the phrenic originates above the 4th cervical segment (confirming Dumond, who places it between the 3rd and 4th cervical; (4) the spinal accessory originates in the antero-external group in the 1st and 2nd cervical segments. Its longitudinal extent could not be determined; (5) the supra- and infra-spinatus muscles are represented by the intermediary group in the 4th cervical segment; (6) the pectoralis major by the intermediate group in the 5th cervical; (7) the anterior brachial region by the posterior groupings in the 5th cervical; (8) the serratus magnus by the longitudinal extent could not be determined; (5) the supra- and infra-7th cervical probably supplies the pectoralis minor; (10) the triceps by the posterior groupings in the 7th cervical and the intermediate group in the 8th; (11) the postero-external group in the 8th cervical innervates the posterior surface of the forearm and the short adductor of the thumb; (12) the postero-internal group innervates the anterior region of the forearm; (13) lower in the 8th cervical the posterior and internal groups supply the muscles of the hand; (14) in the 1st dorsal the small lateral group innervates the hand muscles—the more anterior assist in supplying the anterior surface of forearm.

4. *Case of Labyrinthine Vertigo cured by Electricity.*—Patient, a woman aged twenty-nine years suffered from headaches and vertigo for several years. The vertigo increased in severity, became constant and was accompanied by a staggering gait, nausea and vomiting. There was constant tinnitus in the right ear with slight deafness. Acuity of vision was normal but any visual effort was accompanied by great fatigue (ascribed to disorder of accommodation—analogue to the double vision sometimes observed under similar conditions). Curettage of the pharynx, politerization, tympanic massage and finally incision of the membrana tympani had been practised without avail. The "l'aigrette statique" produced at first an amelioration and finally a cessation of symptoms which had existed three and one half years.

J. R. HUNT.

MISCELLANY.

A FORM OF HEREDITARY CEREBELLAR ATAXIA. Thomas and Roux (*Revue de Medicine*, No. 9, September, 1901, p. 762).

The patient who forms the subject of this paper belongs to a family which, for two successive generations, have produced five individuals afflicted with the same disease. In all of them, the first symptoms have appeared at about the same time, and have followed the

same sequence and have produced the same clinical picture. Clinical summary: woman, forty-seven years old; no previous illness of consequence; at the age of thirty-five the disease first made its appearance with symptoms of pain in the lower left extremity. Locomotion became difficult, spontaneous tremor in the muscles of the lower extremities, and Romberg symptom were present. Patellar reflex retained. Heaviness in movements of upper extremities, muscular sense normal. Immobile facies; speech slow and tremulous. Violent pains in lumbar region. Anesthesia for cold and heat, hyperesthesia to contact and pain in lower extremities. Visual acuity diminished. Pupils normal, nystagmus. Acuity of hearing lessened. Vomiting and nausea after eating. Towards the end of life, legs were immobile, owing to contractions of tendons. Death from pulmonary tuberculosis. Microscopic examination of the central nervous system showed the following: (1) Relative smallness of the cerebro-spinal axis. The cord is especially diminutive, as are the posterior and anterior nerve roots. Great increase of the small nerve fibers which enter into them; (2) partial atrophy of the large cells in the anterior horn. Atrophy and disappearance of the small cells at the base of the anterior horn. Atrophy of Clarke's column. Disappearance of great numbers of the reflex collaterals and of the network of the myelinated fibers of the grey matter of the cord; (3) partial degeneration of the posterior column, localized, firstly, in the column of Burdach, then spreading more and more internally in the dorsal region. In the cervical region it is limited exclusively to the posterior portion of the column of Goll. The disappearance at the level of the nucleus of Goll's column. Partial degeneration of the whole antero-lateral tract, especially marked in the dorsal region. Total degeneration of Gowers' tract. Absence of the direct cerebellar tract, indicated by lack of degeneration in the dorsal region with slight trace in the cervical region; (4) degeneration of the lateral tract of the bulb and atrophy of the corresponding nucleus. Degeneration of the restiform body in its central part, while the peripheral portion is normal. The authors, after a consideration of the subject from the points of view of anatomy, physiology, and pathology, and of classification, conclude as follows: There exists a group of family and hereditary affections in the evolution of which cerebellar symptoms play an important part. The anatomical substratum is to be found in a lesion situated sometimes in the cerebellum, and sometimes in the cerebellar tracts. These cases have in common a general smallness of the neuroaxis. Outside of some clinical and anatomical peculiarities due to the participation of other systems, they differ from each other either by the extent or by the location of the lesion, or by its nature. If, from the anatomical point of view, the most extreme types are not comparable, there are others which have many points of contact between them and which form an intermediary series. SCHWAB.

THE SPINAL CORD OF CHILDREN AND SYRINGOMYELIA. Julius Zapert (Wien. klin. Woch., p. 949, No. 41, 1901).

The object of this study, as stated by the author, is to ascertain whether it is possible, by the examination of large numbers of spinal cords in children, to discover findings which have any relation to the cavity formation in the spinal cords in adults. The concrete question which the author set before him to solve was the discovery of the presence of a hydromyelia in its relation to the peculiarity of the epithelium of the central canal as well as the glia overgrowth, and in addition to follow further Schultze's work on the spinal cord hem

orrhages which take place during the act of labor. Two hundred spinal cords of embryos, infants and children in the first two years of life form the material upon which the study is based. The cords were stained chiefly by the Marchi method and by Nissl, Weigert, etc. The changes found could be divided into two classes: First, intrapartum spinal cord hemorrhages; second, anomalies of the central canal and its vicinity. The results of the study of this material are as follows: One case of intrapartum spinal cord hemorrhage, the location of which was characteristic of the location of the lesions in syringomyelia. Quite frequently an enlargement of the central canal was found. In one cord from a child nineteen months old, in addition to the enlarged central canal, was a glia overgrowth. In the cord of an anacephalous monster, anomalies of the central canal, as well as other pathological cord appearances, could be demonstrated.

SCHWAB.

NEPHROLITHIASIS AND SPINAL CORD DISEASES. Schlesinger (Wiener klin. Rund. No. 41, p. 769, 1901).

Recently the relation of stone in the kidney and diseases of the spinal cord have attracted considerable attention. The hypothesis has been advanced that in some cases spinal cord affections cause the formation of a kidney stone. The statistics of Maschka in this respect are of interest: In 78 cases of nephrolithiasis, he found spinal cord lesions in three. These statistics of Maschka are based upon 15,000 autopsies. In three cases of syringomyelia, Schlesinger found kidney calculus. In two of these, the stones were phosphates, and in the third, urates. Two had cystitis and pyelitis, and the third was free from kidney complications. In another case of encephalomyelitis a kidney calculus was found. From a consideration of these cases, as well as from those found in literature, the author comes to the following conclusions: Kidney calculi are found relatively frequently in traumatic spinal cord affections, and in syringomyelia, much less often in spinal cord tumors. Symptoms of nephrolithiasis follow those of the spinal cord lesions months and years afterwards. Kidney calculi, found in spinal cord affections, are mostly phosphates, much more rarely urates. Cysto-pyelitis can be absent in spite of the kidney stone and spinal cord affection, but is present most frequently in phosphatic stone. The spinal cord affection appears to act favorably upon the formation of a calculus, either directly or indirectly. Perhaps a certain predisposition, especially in the case of uratic calculi, is essential.

SCHWAB.

THE PATHOLOGY AND TREATMENT OF RHEUMATOID ARTHRITIS. P. W. Latham (The Lancet, Vol. clx., 1901, p. 998).

The aim of this interesting contribution is to uphold the dystrophic or neural theory of rheumatoid arthritis. The author feels that although it is said to be without the support of definite evidence of morbid change in the spinal nerve cells or in the nerves of the joint, he believes this criticism to be based on insufficient pathological observation and feels that both clinically and therapeutically he has found cordial support for the dystrophic hypothesis. As regards the clinical side of his argument he points to the distinctly neurotic character of the antecedents and accompaniments of the arthritic trouble. Neuralgias, often mistaken for rheumatism, of the legs, along the spine or across the loins, are frequent forerunners of arthritis rheumatica. Centrally, worry, anxiety, shock—seem to him in some cases to have originated the disease. The most prominent accompaniment of the arthritic mischief is seen in the muscular atrophy.

phy which in many cases intervenes and which develops far too rapidly to be due to mere disuse. Whether this atrophy be primary or secondary, is it reasonable to suppose that it can exist without accompanying degenerative changes in the cord, and is it not fair—from the clinician's view, to assume these changes to be similar to those found in anterior polio-myelitis?

Pathology points to the probable fact that the trophic nerves of the bones and joints are found in the mixed nerve trunk and that they issue along with the motor fibers from the anterior cornua, where they are, like the muscular trophic fibers, connected with a group of large nerve cells. Some connection must exist between these and the brain. Clinically the author has often seen arthritis induced by trauma of the cord or of the peripheral nerves which could not, except by the history of the case, be distinguished from the rheumatoid form. This fact has been known for years. In 1864 Drs. Weir Mitchell, Moorhouse and Keen published their observations on the subject and so far back as 1831, Dr. S. W. Mitchell reported cases where arthritic symptoms supervened upon injury to the spinal cord. These cases were successfully treated by applying a dozen cups and abstracting as many ounces of blood from the neighborhood of the cervical or lumbar enlargements. If the cupping did not afford relief, blisters were applied to the same areas.

Upon the foregoing data it seems not unreasonable to assume that the joint troubles in rheumatoid arthritis are due to spinal congestion or chronic myelitis, chiefly affecting the ganglion cells of the anterior horns but extending also, when the disease is associated with "glossy skin" to the ganglion cells of the posterior horns.

The author cites a number of cases in which blisters, 6 inches by 2½ inches, were applied to either side of the spine, the blistered surface being kept open for a week with savine ointment, daily local massage; arsenic and nitrohydrochloric acid, formed the basis of the treatment and in which marked improvement was the rule. In conclusion he states that in the early stages of rheumatoid arthritis continuous spinal counter irritation is of great value. After the bones have enlarged and the articular cartilages have been destroyed it is of little use. Nevertheless, in these chronic cases where exacerbations of pain and swelling occur, it may be used, often, with distinct and lasting benefit.

JELLIFFE.

PATHOLOGY OF HYSTERIA. F. D. Savill (*Lancet*, 1901, 2, July 20, No. 4,064).

Savill says that the sudden onset of hysterical paralysis (or other malady) suggests a vascular lesion, and the anatomic change is in fact a vascular one—a sudden dilation or contraction of the arterioles of a given area, accompanied in some instances by exudation, or disturbance of nutrition in that part of the nervous system the function of which is deranged. Just as subjects of the hysterical diathesis are liable to attacks of flushing or pallor of the skin, so also, it is believed, are they liable to attacks of flushing and pallor of various parts of the interior of the body. In the absence of experimental proof of the truth of this proposition, Savill directs attention to the clinical features of hysterical syncope, to the evidences of the hysterical diathesis, and to the causes of hysteria as tending to confirm his contentions. He states that the essential lesion in hysterical syncope is to be sought in the abdominal sympathetic, and that this lesion, whatever it may be, gives rise to a rapid dilation of the splanchnic arteries and consequently to cerebral anemia. The hyster-

ical diathesis is defined as a peculiar condition of the nervous system, inherent in the individual and for the most part inherited, consisting in its psychical aspect of a want of self-control and emotional instability, and in its physical aspect of a tendency throughout life to the development of various sensory, motor, visceral, or neurovascular disturbances unconnected with any definite organic lesion discoverable by our present means of investigation. With regard to the pathology of the hysterogenetic phenomenon, it is believed that pressure upon the inguinal region results in the production of the aura, etc., by producing dilation of the splanchnic area and consequent cerebral anemia—through the medium of the iliohypogastric nerve, the centripetal depressor nerve of the abdominal sympathetic. There may, apparently, be other depressor nerves in patients who present other hysterogenetic zones. SMITH.

UEBER SENSIBILITÄTSSTÖRUNGEN DER HAUT BEI MAGENKRANKHEITEN). Haenel (Muenchener medicinische Wochenschrift, Jan. 1, 1901).

Head's conclusions are confirmed by the author, who finds that the dorsal areas 7-9 are most commonly affected in diseases of the stomach. At times, however, hyperalgesia may extend beyond these zones. Hyperalgesia of the arm, especially on the inner surface of the arm and over the deltoid muscle, does not negative disease of the stomach. The two points sensitive to pressure described by Boas, one to the left and the other to the right of the twelfth dorsal vertebra, are found to exactly coincide with the two maxima of Head, while the sensitive point in the epigastrium is probably also a reflex hyperalgesia rather than due to direct pressure. The writer gives brief histories and the localization of the hyperalgesia in five cases of disease of the stomach. The areas of pain coincide in the main with the deductions of Head. JELLIFFE.

Book Reviews.

THE MENTAL FUNCTIONS OF THE BRAIN. By Bernard Hollander, M.D. G. P. Putnam's Sons, New York and London.

This is a work of some 500 pages devoted to a study by means of clinical histories of the localization of certain functions of the brain, more particularly bearing on the study of morbid mental phenomena.

In many ways it is unique. The author sets himself the task of clearing up the mystery of the fundamental psychical functions and their brain localization. In thirteen chapters he gives an apotheosis of the work of Gall and some of his followers, and thus clearly sets forth his position as a defender of phrenology brought up to date. His successive chapters bear on "The Present State of Mental Science," "The Pathology of Melancholia, Irascible Insanity and Mania Furiosa, Mania of Suspicion and Persecution, Localization of Special Memories, Material for Future Localization, the Cerebellum, Relation of Brain and Skull, History of Gall's Doctrine and Phrenology, Opposition to Phrenology, Comte's Positive Psychology, based on Gall's Doctrine, Testimony of the Truth and Usefulness of Phrenology by eminent medical men, and conclusion.

It would be impossible here to analyze the author's work in this place. There is in it much food for thought for one who will lay aside for the purposes any opinion of one's own and take the statements as they are presented, but further than this it seems impossible to go.

The work is one of that distinctly modern and interesting psychological type of book in which good material is wasted by lack of logic and want of perspective. There are many truths in the chapters which are utilized to bolster up, in many instances very sane conclusions, but mostly we believe for glittering and premature generalizations.

The modern scholar well versed in these lines can well afford to pass an idle hour in the reading of this work. To the uninitiated many of the statements will pass as whole truths, whereas they show true gold here and there, sometimes panning out rich in useful facts.

The author has conferred a service in bringing together so many clinical histories, although it is impossible without referring to all the literature cited to ascertain if we do not here find an example of scientific casuistry of the most reprehensible type. Special pleading, however, is a universal fault even among the best of logicians and if the author has built up an imposing array of evidence by suppressing uncomfortable facts, he but follows the example of many another.

One discordant note of a very disagreeable nature is manifest throughout. The author sees fit to slur modern scientific inquiry, building up hypothetical standards and then demolishing the same, by pointing out individual errors and making them the mouthpiece of scientists at large. This thoroughly unscientific and tiresome attitude tends to nullify all the good that a tolerant reader is disposed to find.

JELLIFFE.

NUOVO CONTRIBUTO CASUISTICO ALL PSICOPATOLOGIA FORENSE. NOTE DI ANTROPOLOGIA CRIMINALE. Per il Dr. G. Sanna Salvaris. Cagliari-Sassari.

The author here contributes a series of short notes on some fourteen cases of medico-legal interest from the alienist view-point. In brief they deal with legal questions arising from arrest of mental development, 3 cases; melancholia, 2 cases; paranoia, 5 cases; alcoholic dementia, 1 case; epileptic insanity, 2 cases; and three miscellaneous cases representing homicide and parricide. JELLIFFE.

LE TRAITEMENT DES NÉVRALGIES ET NÉVRITES. Par A. F. Plicque. Ancien interne lauréat des Hospitaux, Ancien Chef du Laboratoire d'Electro-thérapie de Lariboisiere, etc. J. Bailliere et Fils., Paris.

This small volume is another of this excellent series of "Les actualités médicales," published by the well-known firm of Bailliere et Fils.

Large numbers of contributions have been put forward both from the surgical and medical standpoints, bearing on the treatment of the neuralgias, and yet at the present time they present numerous points of difficulty in the practical management of many cases. The present volume, though short, is a practical résumé of the most recent studies and is deserving of special commendation. ELY.

HANDBUCH DER GERICHTLICHEN PSYCHIATRIE. Unter Mitwirkung von Prof. Dr. Aschaffenburg, Privat docent Dr. E. Schultze, Prof. Dr. Wollenberg, herausgegeben, von Prof. Dr. A. Hoche 8vo, 732 pages. August Hirschwald, Berlin, 1901. 20 marks.

A handbook of legal psychiatry which includes within its covers so much material of vital interest to the alienist, cannot fail to be appreciated in this country where the laws may be different, but the principles enunciated are the same.

With an increasing complexity of social relations the legal status of the mentally-afflicted citizen becomes more and more involved and as the general average of intelligence rises there is made apparent an increase in the interest in and stress laid upon matters which ten years ago were not thought about.

For the American alienist the first half of the book will prove of more interest. In it the authors present a series of clinical descriptions of diseased mental types that are characteristic of the forms which involve legal complications, and especial stress is laid upon detailed modes of examination for those symptoms which bear directly on the medico-legal sides of the problem.

For the jurist the complete exposition and the Prussian legal forms will be invaluable although largely incomprehensible for the non-legally trained physician.

A special portion of the volume deals with the clinical types of insanity. This by A. Hoche is to be commended most heartily. The work is a masterly one and deserves a wide recognition.

SMITH.

News and Notes.

A PRIZE of four hundred dollars is offered by Dr. J. B. Mattison, medical director of the Brooklyn Home for Narcotic Inebriates, for the best paper on the subject, "Does the Habitual Subdermic Use of Morphia Cause Organic Disease—If so, What?" The contest is to be open for two years from December 1, 1901, to any physician. The paper may be submitted in any language. The award is to be determined by a committee, composed of Dr. T. D. Crothers, of Hartford, Conn., editor of the *Journal of Inebriety*, chairman; Dr. J. M. Van Cott, professor of pathology, Long Island College Hospital, Brooklyn, and Dr. Wharton Sinkler, neurologist to the State Asylum for Chronic Insane, Philadelphia. All papers are to be in the hands of the chairman by or before December 1, 1903, and are to become the property of the American Association for the Study and Care of Inebriety, and to be published in such journals as the committee may select.

DR. ALBERT E. BROWNRIGG, for three years assistant physician at the New Hampshire State Hospital for the Insane, has accepted an appointment as resident physician at the Highland Spring Sanatorium, at Nashua, New Hampshire.

DR. M. B. WEYMAN, of New York, has been appointed first assistant physician of Manhattan State Hospital.

FRANK A. RUF, President of the Antikamnia Chemical Co., has been elected Vice-President of the Fourth National Bank, of St. Louis, Mo.

DR. CHARLES K. MILLS has been elected Clinical Professor of Nervous Diseases; Dr. William G. Spiller, Assistant Clinical Professor of Nervous Diseases and Assistant Professor of Neuro-pathology; and Dr. Charles W. Burr, Professor of Mental Diseases, in the University of Pennsylvania.

DR. ALFRED WIENER has been appointed adjunct neurologist to the Montefiore Home.

DR. J. ELVIN COURTNEY has resigned the position of Chief of Staff of Hudson River State Hospital at Poughkeepsie, N. Y., and removed to Denver, Colo.

DR. SMITH ELY JELLIFFE has been appointed Visiting Neurologist to the City Hospital.

DR. RALPH F. SOMMERKAMP has resigned the position of assistant physician in the Insane Department of the Philadelphia Hospital.

IT IS SAID that morphine is used extensively in the town of Juana Diaz, Puerto Rico. It is estimated by the insular board of health that out of the 2,500 inhabitants 1,000 are victims of this habit.

DR. WM. B. PRITCHARD, of New York, was appointed Consulting Neurologist to the S. R. Smith Infirmary, Staten Island, New York, by the trustees of that institution at the November meeting.

THE ONLY BIBLIOGRAPHY of *American Neurology and Psychiatry* published is to be found in this JOURNAL on advertising pages

xviii and xx. It already consists of nearly 900 references. Cut these references out, past them on cards, and keep a complete index of what is being written in America on neurology and psychiatry.

AT A MEETING of the Board of Managers of Craig Colony, held at Sonyea, N. Y., on October 8, 1901, the report of the Prize Committee, consisting of Drs. G. W. Jacoby, Pearce Bailey and Ira Van Gieson, was approved, and the prize of \$200 was awarded to Professor Carlo Ceni, of Pavia, Italy. The successful essay, the title of which is "Serotherapy in Epilepsy," will shortly be published in the *Medical News*. As elsewhere announced, the prize is again offered for universal competition.

THE PLANS for the county insane hospital at Weyauwega, West Virginia, have been approved, and the contracts let. The building will cost about \$80,000 and will accommodate 125 patients.

DR. J. ARTHUR BOOTH presented to the New York Neurological Society, a portrait of one of the founders of the society, the late Dr. E. C. Seguin. The portrait was donated by Mrs. Seguin.

THE REORGANIZATION of the Pathological Institute of the New York State Hospitals for the insane, made necessary by the resignation of the former director, Dr. Ira van Gieson, early last summer, has been proceeding slowly, but it is now announced that Dr. Adolf Meyer, of the State Hospital and Clark University, Worcester, Mass., has been appointed by the lunacy commission to fill the position of director of the institute.

It is further announced that the plan of work of the institute will be organised on a basis which should be satisfactory to the medical profession, to the physicians in the State Asylums for the insane, to the various universities of the State, to scientists in general, and to the taxpayers. Dr. Meyer is to be left free to select his assistants in the various departments of the laboratory work, but will be assisted in this selection by the advisory board.

DR. GEORGE A. ZELLAR, of Peoria, Ill., who is now in the Philippines, where he holds a commission as surgeon in the army, has been elected superintendent of the asylum for the incurable insane at Bartonville, Ill., by the trustees of the institution. He succeeds Dr. F. W. Winslow, who died recently.

GOVERNOR ODELL has appointed Mr. Daniel M. Lockwood the legal member of the State Commission in Lunacy, to fill the vacancy caused on July 1 last, by the resignation of William Church Osborne, of New York City.

JONATHAN HUTCHINSON, F.R.S., General Secretary of the New Sydenham Society, has requested Messrs. P. Blakiston's Son & Co., of Philadelphia, the American agents of the Society, to announce the publication of an "Atlas of Clinical Medicine, Surgery and Pathology," selected and arranged with the design to afford, in as complete a manner as possible, aids to diagnosis in all departments of practice. It is proposed to complete the work in five years, in fasciculi form, eight to ten plates issued every three months in connection with the regular publications of the Society. The New Sydenham Society was established in 1858, with the object of publishing essays, monographs and translations of works which could not be otherwise issued. The list of publications numbers upwards of 170 volumes of the greatest scientific value. An effort is now being made to increase the membership, in order to extend its work.

DR. J. T. ESKRIDGE, a prominent specialist in nervous and mental disease, a member of the American Neurological Association, and a life-long friend of this JOURNAL, died in Denver, January 16, at the age of fifty-four years. Dr. Eskridge was forced to settle in Colorado because of pulmonary tuberculosis, and he there built up a large practice. He died of tuberculosis and chronic nephritis.

NEW YORK'S CHARITIES BILL is having many vicissitudes. Notwithstanding the fact that it seems to be one of Governor Odell's pet schemes, so much opposition has been aroused that there are hopes in most quarters that it will be defeated. The scheme appears to be a political one, whereby all the purchasing and executive power can be controled at Albany by a few appointees of the Governor. The objective point is to do away with the voluntary Local Board of Managers.

OPPOSITION TO THE CHARITIES BILL on the part of the New York Neurological Society was evidenced by the action of its council, by which body a resolution of condemnation of the bill was passed. It is understood that Dr. Joseph Collins and Dr. E. D. Fisher attended the public hearing at Albany and argued against the bill.



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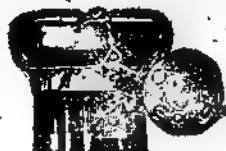
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THE
Journal
OF
Nervous and Mental Disease.

Original Articles.

HEREDITARY CEREBELLAR ATAXIA, WITH REPORT OF
A CASE.*

BY HUGH T. PATRICK, M.D.,

OF CHICAGO.

PROFESSOR OF NEUROLOGY, CHICAGO POLICLINIC; CLINICAL PROFESSOR
OF NERVOUS DISEASES, NORTHWESTERN UNIVERSITY MEDICAL SCHOOL.

In 1893 Marie¹ grouped together two cases reported by Fraser², three by Nonne³, eight by Sanger Brown⁴, and three by Klippel and Durante⁵, and gave to them the name *hérédotaxie cérébelleuse*. It was a bold thing to do! Deliberately to make an addition to the nosology of nervous diseases without having had an opportunity to personally study a single example of the new malady, savored somewhat of genius—or of effrontery. Just which of these two elements dominated the situation remains to be seen, for after more than eight years of deliberation by many neurologists and the report of a number of cases in various countries, the assumption of Marie remains neither substantiated nor fully refuted. It is still *sub judice*.

The obstacles in the way of establishing hereditary cerebellar ataxia as a distinct disease are several: first, a fundamental barrier, diversity of symptoms in the original basic

*Read before the Chicago Neurological Society, November 21, 1901.

sixteen cases; second, absence of uniformity of subsequent cases reported as examples of this disease; third, lack of careful post-mortem examinations in cases which were, clinically, sufficiently typical; and, fourth, variation in post-mortem findings. To these may now be added, fifth, several autopsies which strongly tend to controvert Marie's thesis.

To establish the new type it is first necessary to segregate the cases from those of accidental family type due to lues⁶, parturition injury and the like, from hereditary quadriplegia with incoördination⁷, from Friedreich's disease and from certain cases of indeterminate nature, not yet classified, affecting cerebrum and cerebellum or cerebrum, cerebellum and cord; and then the cases so separated must be shown to be sufficiently similar in clinical manifestations and structural changes to allow of amalgamation into a pathological solidarity. In the attempt to fulfil the first of these conditions the greatest difficulty arises in drawing the line between the proposed group and Friedreich's ataxia, and in selecting cases from the heterogeneous mass of more complicated diseases characterized clinically by progressive incoördination with preserved or exaggerated reflexes. Owing principally to lack of material and as yet inadequate knowledge, but to some extent also to loose methods, neither condition can be said to have been met.

A succinct statement of Marie's claim with brief mention of the basal and some of the later reported cases will elucidate the present status of the question. Although none of the basal cases had been reported as Friedreich's ataxia, Marie devotes a large part of his paper to a differentiation of his new type from this disease. The prominent features of Friedreich's ataxia, it will be remembered, are family type, inception before fourteenth or sixteenth year, incoördination in station and progression, rather of the staggering than the spinal ataxic sort and often not increased by closure of the eyes; movement of the upper extremities characterized by disorder resembling intention tremor, but at the same time oscillatory and choreiform; speech slow, uncertain or explosive; loss of deep reflexes; integrity of pupillary reactions,

ocular muscles and optic nerve; presence of nystagmus, deformity of the feet and spinal curvature; unimportance of sensory and mental symptoms.

In contrast, Marie predicates of his group, hereditary as well as family type, inception after twenty, exaggeration or at least presence of the deep reflexes, defective pupillary reactions, involvement of the optic nerve and ocular muscles, and absence of deformity. In mode of onset and progress, character of motor disorder, frequent absence of Romberg's sign, presence of nystagmoid jerking, defect of speech, unimportance of mental symptoms and lack of prominence of sensory troubles, the two affections are so nearly identical as not to admit of definite distinction. Marie further laid great stress on the totally different pathological anatomy of the two diseases, affirming for his type atrophy of the cerebellum as the structural basis, instead of the combined sclerosis known to be present in the ataxia of Friedreich. Indeed, the qualification "*cérébelleuse*" was added to the title purely on this assumption.

Let us see what the basal cases show. Fraser reported his as "Defect of Cerebellum Occurring in a Brother and Sister." The disease began in infancy or early childhood, and was characterized by incoördination, ocular paralysis, slow hesitating speech and, in one case, by slow pupils and vertigo on assuming the supine position. Nothing is said as to reflexes.

Nonne made no attempt to classify his cases (three brothers), calling the affection simply "A singular disease of the central nervous system." Symptoms began at ten, fourteen and in middle life respectively, and the patients exhibited incoördination, preserved deep reflexes, eye symptoms, incoördinate speech and some mental weakness.

Brown reported his cases as "Hereditary ataxia," recognizing that they constituted a group quite distinct from previously classified forms, remarked that if they were to be accepted as instances of Friedreich's ataxia, the criteria of this disease should be considerably modified, but ventured no opinion as to classification. In this truly remarkable series

of more than twenty cases, the disease was traced through four generations and was found to preserve a tolerably determinate form. In addition to ataxia, the principal characteristics were:—onset after early childhood (11th to 45th year), optic atrophy, ptosis, impaired pupillary reflexes, exaggeration of knee-jerks, and imperfect articulation; no sensory symptoms, disturbance of the muscular sense, spinal curvature or club foot. In commenting upon these cases both Omérod⁸ and Bernhardt⁹ compared them with those of Nonne and also with the case, or rather cases, of Menzel, presently to be mentioned, and both were unwilling to allow that Brown's cases constituted an aberrant form of Friedreich's disease, but neither ventured to assert identity of the type with those of Nonne.

Klippel and Durante were also non-committal as to the nature of their cases, entitling their communication "Contribution to the study of family and hereditary nervous affections." Their patients, two brothers and a sister, like most of the others presented incoördination, impaired speech and eye troubles, but unlike the others, also sensory symptoms, scoliosis and club-foot (*pes cavus*).

Passing now to the pathological basis of the new disease we find a foundation insufficient in both extent and uniformity. At the time of Marie's paper he could refer to only two autopsies; one each by Fraser and Nonne. In Fraser's case the cerebellum was found to be small (one-half the normal weight), the Purkinje cells diminished in number and altered in form. There were also cystic collections of fluid between the convolutions, which the author considered to be unimportant. Apparently the cord was not examined. In the case of Nonne the cerebellum (with pons and medulla) weighed only 70 per cent. of the normal, but the cerebrum was also small (87 per cent. of normal) and the cord proportionately smaller than either. Squaring the average diameter of the cord and multiplying this by the length, as a basis of comparison of bulk, I find that the cord of the patient was in total size only 44 per cent. of normal. Clearly, to assert atrophy

of the cerebellum as the essential and basic lesion in this case is to approach seriously near to the absurd—the more so as an exhaustive microscopic examination failed to reveal anything abnormal except in the proportion of coarse and fine fibers in the nerve roots of the cord and in some of the peripheral nerves.

Marie has, indeed, as Nonne¹⁰ says, drawn the boundaries rather wide. To make this fact graphically apparent, I have constructed the accompanying table, from which it is readily seen that while each of the four sets of cases remains reasonably constant to its own type, all the cases agree in only two particulars—incoördination and family type—although nearly all showed present or exaggerated reflexes. In addition it may be specially noted that excepting only the cases of Sanger Brown, there is no conclusive evidence of direct heredity.

The basal cases, then, are constant to each other in neither heredity, age at onset, rate of progress, eye symptoms, sensory symptoms, speech, mental disorder, condition of reflexes, nor post-mortem findings. Subsequent contributions have not as yet served to crystallize a type or even to simplify the complexities of the subject, as, I think, a brief review will show.

Since Marie's publication three of Sanger Brown's cases have come to autopsy and in one of these (No. VI.) a microscopic examination has been made by Dr. Adolf Meyer¹¹. As no notes were made at the time of the autopsy¹², the exact size of the different parts of the nervous system is not known, but there was no striking diminution in the size of any part, and Meyer says, "There is no circumscribed cerebellar lesion, nor does the cortex show a marked decrease of the number of Purkinje cells." The cervical cord showed changes very similar to those found in Friedreich's disease. In other words, this autopsy lends no support to Marie's claim. As Meyer very moderately puts it, "The separation of a *type cérébelleire* is clinically justified, but anatomically to less extent than Marie seemed to expect. The material of the other two au-

| Cases and Reporter | Heredity | Number of cases in family | Age at onset | Deep reflexes | Optic atrophy | Proteas | Ocular paralysis | Nystagmus | Pupils | Speech | Mental | Autopsy | Remarks |
|--------------------|-----------|---------------------------|--------------|-------------------|--------------------|---------|------------------|-----------|-----------------------------------|------------------------|--------------------------|---|---------------------------------------|
| Fraser | 1 None | 2 | 2-3 | | None | Present | None | None | Slow | Slow, hesitating | Normal | Small cerebellum, all changes | Uneasy movements of eyes |
| Nonne | 2 None | 2 | About 2-3 | | " | " | " | Present | Sluggish to accom. | Slow | " | Small nervous system | |
| | 1 None | 3 | 25-30 | Present | Present | None | Paresis | Present | Irregular | Irregular | Slight acute dementia | | |
| | 2 None | 3 | 14 | Slightly exagger. | " | " | " | " | L X R | Explosive | Slow | | |
| | 3 None | 3 | 10 | Brisk | " | " | " | " | Normal | Incoordinate | Weak | | |
| Brown | 1 Present | 4 | 18 | Exaggerated | Present | Present | None | None | Slow | Slow | Normal | Cerebellum normal. Cord changes on case | The autopsy of Meyer was made on case |
| | 2 " | 4 | 20 | " | Probably beginning | " | " | " | " | Slightly difficult | " | Cerebellum normal. Cord changes on case | Cerebellum not personally examined |
| Inclipt | 3 " | 4 | 18 | " | Present | " | " | " | " | Defective | " | Cerebellum normal. Cord changes | by Brown |
| | 4 " | 4 | 21 | " | Present | Present | Present | " | No reac. to light | Slow | Memory slightly impaired | | not one of the eight |
| | 5 " | 1 | 35 | Absent* | Present | Present | Present | " | Slow | " | Normal | | |
| | 6 " | 2 | 31 | Exaggerated | " | " | None | " | Slight reaction to light | " | " | | |
| | 7 " | 4 | 35 | " | " | None | " | " | " | " | " | | |
| | 8 " | 3 | 40 | " | " | " | " | " | Slightly defective | Slightly defective | " | | |
| Klippel & Durante | " | 3 | 26-27 | Present | Absent | None | None | Present | To light—To accom. slight Varied* | Indistinct, hesitating | Memory slightly weak | Changes in cord & cerebellum | |
| | 1 | 3 | 33 | Feeble or absent* | " | " | " | None | Normal | Ataxic | Weak | do | |
| | 2 | 3 | 33 | Present | Present | Present | Present | Present | Normal | Slow, defective | | | |
| | 3 | 3 | 35 | Present | Present | Present | Present | Present | Normal | Slow, defective | | | |

*Not to be elicited on account of contractures. In 1888 knee-jerks were diminished, in 1894 gone. *Londe is mistaken in reporting optic atrophy present in these cases. In 1888, reaction normal; in 1892, lost; in 1894, slight.

topsies (cases 18 and 20 of Dr. Brown's diagram) is now in process of examination by Dr. Lewellys F. Barker*

One of the first to accord recognition to Marie's disease was Brissaud¹⁸ but he did so with some reserve, insisting that although *hérédo-ataxie cérébelleuse* might be essentially different from Friedreich's disease, its systemic localization was nearly the same, and acknowledging that if his patient had only had absence instead of exaggeration of the deep reflexes he would instantly have made a diagnosis of Friedreich's ataxia. Later in the same year Londe¹⁴ published a report of two additional cases which likewise were to be distinguished from Friedreich's disease only by the exaggeration of the reflexes.

Quite the most complete treatment of the subject is the later monograph of this author¹⁵, who bases his description on the cases already mentioned, two of Erb¹⁶, and two of Seeligmüller¹⁷.

The patients of Erb were two sisters, aged twenty-two and eleven years, in whom the disease had existed for sixteen and four years respectively. The knee-jerks were "very lively" or "exaggerated." Erb demonstrated the cases as examples of Friedreich's disease, and indeed, aside from the condition of the knee-jerks, there seems to be no possible reason for calling them anything else.

I have found only an abstract of Seeligmüller's cases, but they appear to belong neither to Friedreich's nor Marie's disease. Indeed, Londe frankly says that he is unable to classify them, but as they showed incoördination and lively knee-jerks, he puts them in as cases of *hérédo-ataxie cérébelleuse*—a rather feeble excuse, it seems to me.

In a paper published several years after the one that Marie made use of, Nonne¹⁸ reported six more peculiar cases marked especially by incoördination, and therein he distinctly declines to support the dictum of Marie, not only calling attention to the fact that the basal cases of this author differed in some of the fundamental symptoms, but also insisting that

*See statement of Dr. Barker, second paragraph before report of my case.

transition forms could be found bridging all the differences between Friedreich's ataxia, cerebellar atrophy, Marie's type and other entirely unclassified forms of disease. Indeed, four of the cases reported in this second paper are particularly good examples of these connecting links.

Another stumbling block is the case of Menzel¹⁹. Why it should be excluded, as it is by Marie, or considered as intermediate, as it is by Londe, is not clear, in the presence of family character, onset relatively late (twenty-eight years), incoördination of all extremities, pupillary signs and exaggeration of the knee-jerks. But Marie probably considered that he could not include it in his type because the anatomical changes did not agree with what he thought *they ought to be*. Besides atrophy (or rather aplasia) of cerebellum and pons, there was the cord degeneration typical of Friedreich's disease. In the absence of autopsy I am inclined to think he would have made the case of Menzel part of his foundation. As it is, he mentions the post-mortem as showing the lesions of both hereditary cerebellar ataxia and Friedreich's disease, and intimates that therein is cause to give us pause.

In 1893 Senator²⁰ published what he believed to be an incipient case of Friedreich's ataxia and expressed the opinion that the disease is essentially a congenital atrophy of the cerebellum, or important parts thereof, accompanied by congenital atrophy of the spinal cord. This position was very warmly attacked by Schultze²¹ who asserted that the case was not one of Friedreich's disease at all because the knee-jerks were present and there was no locomotor (only static) ataxia. In a second paper, Senator²² valiantly defended his opinion, and, clinically, at least, had rather the better of the argument as by that time the knee-jerk had quite disappeared on one side and almost on the other.

Two years before the paper of Marie, Fornario²³ recorded three cases of hereditary ataxia (two brothers and a sister) anomalous in several respects. The second one exhibited exaggerated knee-jerks, but later the jerk diminished on one side. Discussing his cases the author in a measure anticipates Marie but is much more conservative. He called at-

tention to the difficulty of clinical distinction between the cerebellar, spinal and combination cases, and seemed to assume a chiefly cerebellar origin for Friedreich's disease.

The case of Menzel, just noted, early showed exaggerated knee-jerks while later they were hardly to be elicited, and one of the patients of Klippel and Durante, as noted in my table, exhibited at the time of examination normal knee-jerks while two years later Oulmont and Ramond²⁴ found them absent.

In a recent number of *Brain*, Howard Gladstone²⁵ describes a case of Friedreich's ataxia with presence of the knee-jerks and ankle-clonus. Not only was the case sufficiently typical, with the exception of the reflexes, but it was comparatively advanced, and a younger brother had the same disease much less advanced but with loss of deep reflexes. Starr²⁶ reports a case adhering to the type of Friedreich in all essentials, except that "the knee-jerks were very much exaggerated," and avows the as yet inadequacy of distinction between this disease and that of Marie.

Of two sisters with Friedreich's disease described by Raymond²⁷ one had brisk knee-jerks and the other none. I have myself seen a sufficiently typical and well-advanced case of Friedreich's disease in which the knee-jerks were present although they had been diminishing for some time, and Hodge²⁸ mentions three cases, all with marked increase of the knee-jerk. The disease began at twelve, fourteen and fifteen respectively, and the patients were still living at forty-four, forty, and thirty-nine years.

From the clinic of Erb, Paravicini²⁹ reports a case of what he calls cerebello-spinal ataxia inasmuch as it partook of the clinical features of both Friedreich's disease and *hérédo-ataxie cérébelleuse*. To the ordinary symptoms of the former were added rigid pupils and ocular paralyses, but optic atrophy was wanting.

The two cases reported as hereditary cerebellar ataxia by K. Miura³⁰, correspond clinically very closely to the type of Marie, but a most careful post-mortem examination of the

first one revealed simply diminution in size of pons, medulla, cord and cerebellum, without microscopic change.

A series approximating that of Sanger Brown in extent and interest is recorded by Lennmalm²¹. Of thirty-three members of the family in several generations, eight seem to have had the disease and of these the author reports three—a young woman of twenty-two, her mother *aet.* fifty-two, and a maternal aunt *aet.* forty-five. They were characterized by late inception (13, 43 and 26 years respectively), gradually appearing and progressing ataxia of the lower extremities, later involvement of the arms, defective vision, paresis of ocular muscles, imperfect articulation and exaggeration of deep reflexes, including ankle-clonus. Unfortunately, autopsies are wanting.

Somewhat different are the cases (a sister and two brothers) reported by Rossolimo²². There was no evidence whatever of previous or collateral members of the family having had any similar affection. The sister, 29 years old, had always been rather clumsy in her movements, and only middling bright mentally, but there was no progress of symptoms until after a severe accident at the age of twenty. She was found to have advanced ataxia, involving the hands which were also tremulous, paresis of one superior oblique and exaggeration of the knee-jerks. One brother, 24 years old, developed in a perfectly normal way and remained well until the age of eighteen, when, after a severe febrile illness, he began to develop the symptoms of hereditary ataxia. Prominent were the characteristic gait, ataxia of the hands, paresis of one internal rectus, over-action of facial muscles, exaggerated knee-jerks and slight ankle-clonus. In the next younger brother nothing abnormal was noticed until the age of thirteen, when he began to have an uncertain gait. Examination showed incoördinate over-action of facial muscles, imperfect articulation, ataxia, and paresis of one internal rectus. No mention is made of reflexes.

About 1894 Dr. I. H. Neff²³ published a series of cases in one respect more remarkable than any on record; viz., the age at onset. He had an opportunity of examining only two

cases (sisters), but if we may suppose the other cases in the family, traced by correspondence and personal interview, to have been the same disorder, there were thirteen cases in four generations and the disease never began under the age of fifty-five. One patient in whom it began at sixty was still living at eighty-six, unable to walk but mentally clear, and in two instances it began at seventy-two. In his first case the trouble began at fifty-five years, the first symptom being incoördination in walking. Then followed pains, not severe, in the back and legs. At fifty-eight, the arms and hands showed ataxia, and six months later speech became hesitating and stammering. A year after this she had become quite helpless, but presented no mental symptoms. At seventy-two years she began to exhibit irritability with occasional confusion and persecutory delusions alternating with depression. At this time incoördination of the lower extremities was extreme. The arms showed ataxia and volitional tremor. Speech was slow, ataxic and explosive, accompanied by tremor of facial muscles. The pupils were equal in size and reacted normally, vision unaffected. The inner surfaces of the legs were slightly anesthetic and sensation seemed delayed, probably in consequence of the mental state, as there was some dementia. The knee-jerks were active and slight ankle-clonus was elicited on the right side. Faradic excitability is said to have been increased. Six months later occasional twitching of the eyes could be observed when the patient fixed, and the pupils reacted sluggishly to light. Three months after this their reaction was normal.

His second case was a counterpart of the first except that the disease began ten years later, and that possibly optic atrophy developed in the terminal stage. One of these patients was an inmate of the asylum at Kalamazoo, Michigan, and the superintendent, Dr. William M. Edwards, has kindly furnished me the following additional information:

She lived more than five years after Neff's last note and about a year before death her condition, briefly, was as follows: While possessing a fair degree of strength, incoördination was so marked that she could walk only a few steps

without assistance, and the movements of face, tongue and upper extremities were also extremely ataxic. The knee-jerks were slightly decreased except on reënfacement and the pupillary reflexes were normal. The patient was quite deaf and "failing some in vision"—cause not stated. Aside from slight depression at times, her mental state was normal. At the autopsy, "examination of the brain and spinal cord revealed no gross changes excepting adherence of the dura in the frontal region and shallowness of the fissures." A microscopic examination has been made at the Pathological Department of the Michigan State Asylums, whence a full report will issue. The note sent to Dr. Edwards is simply to the effect that there were present atrophy of the cerebellum, degeneration of the cerebellar tracts of the cord, and marked arterio-sclerosis of cerebral vessels. So far as known, then, this case scarcely sustains the contention of Marie.

Illustrative of how cases may adhere to the schema of Marie in some particulars and entirely depart from it in others, the case of Legrain⁸⁴ (de Bougie) may be cited. The mother, four maternal aunts and the maternal grandfather had died between forty and fifty, of an affection diagnosed "ataxia," and an elder brother had died at thirty-two of a similar disease. In the patient, uncertainty of gait began at the age of thirty-one, and at thirty-eight, when examined by the author, incoördination was marked in the upper as well as the lower extremities. The deep reflexes were exaggerated, sensation and mentality intact. Eye symptoms were entirely wanting and in addition to the disorder of motion, there were observed, when the patient was at rest, constant slight choreiform movements of different parts of the body—muscular inquietude. It is also to be noted that beginning two years after the onset of his malady, the patient suffered for two years with excruciating pains in thighs and calves, associated with muscular cramps of extreme severity.

In the same category of aberrant cases, cases that really adhere to no type and yet might be thought to fall within the limits of hereditary cerebellar ataxia, belongs the case of Collins⁸⁵. The only indication of hereditary family disease was

that the preceding child, who had died at the early age of two years, had not developed normally and *probably* had some incoördination. In the patient, a boy eleven years old, imperfect gait had been noticed as early as the third or fourth year. Having started to school at five, he was still in the same grade. In his tenth year he had some kind of acute attack, in which the left side became useless and thereafter there were exacerbations of incoördination on one side or the other. At eleven, he had an uncertain gait and fell easily. There were also present ataxia of the upper extremities, involvement of speech, over-action of the facial muscles and right *pied bot*. The pupils were slow to light and accommodation.

Who can at present say where the three cases of Nolan²⁶ belong? He reports them as cases of Friedreich's disease, (hereditary ataxia), associated with genitous idiocy, and while asserting that they were "without doubt" examples of Friedreich's disease, he notes points of resemblance to Marie's disease, the peripheral hereditary ataxia of Dejerine and Sottas²⁷, and family cerebral diplegia. The patients were the third, fifth and eighth children of the same family, the ages were twenty-two, fifteen and ten years respectively, in each case symptoms were noticed soon after birth, although the disease was gradually progressive; mental impairment and incoördination were present in all. Two had no knee-jerks, which would indicate Friedreich's disease, but in the second patient they were exaggerated. Furthermore, the pupils reacted normally in all three. All showed speech defect and nystagmus, two slight strabismus, but all normal vision. The first and second patients had some analgesia of the extremities, and the second and third wasting of the small hand muscles.

In a recent exhaustive paper on family diseases, Bäumlin²⁸ calls attention to many variations of Friedreich's ataxia and sundry inconsistencies of Marie's disease, and also reports a group of four sisters who presented clinically a certain similarity to the latter, but who suffered, he believes, with Westphal's²⁹ pseudo-sclerosis. In any event, the care-

ful autopsy made in one case revealed nothing but very slight chronic meningitis.

The difficulty of asserting the type which Marie so loosely defines is manifest in the presence of cases like that described by Spiller⁴⁰. It appears to have been congenital in origin, or at least to have begun in extreme infancy, to have presented no very distinct ataxia, but marked mental impairment, and to have been scarcely at all progressive from infancy to the age of nineteen when the patient succumbed to tuberculosis. He was microcephalic and at the autopsy not only was the cerebellum found to be small, but the corpus callosum was almost wanting and the left cerebral hemisphere was markedly atrophic. In the same article three other cases of cerebellar disease are reported, very similar to this one, but not included in the same category by the author.

Cases such as that reported by Knopfmacher⁴¹ are far from rare and yet he endeavors to approximate it to hereditary cerebellar ataxia. A boy of six years exhibited speech defect and incoördination which had been noticed from earliest childhood and had remained non-progressive. The case resembled hereditary cerebellar ataxia only in the presence of these symptoms and exaggerated knee-jerks, but it is only fair to hold Marie himself in part responsible for such irresponsible classification, because he has defined a certain group with such comprehensive and elastic definition as covers a multitude of sins.

Quite similar to the foregoing case is the one reported by Redlich⁴², but this author at once says that the resemblance to Marie's type is superficial only. The patient, *act.* fifty-two had some acute illness at the age of two years and was thereafter "paralyzed and blind." He presented all the more important signs of hereditary cerebellar ataxia, but Redlich, very properly, I think, considered the cause to be an acute inflammation at the time of onset, followed by atrophy and sclerosis.

After this paper was quite finished except some verbal corrections, came the *Revue de Médecine* for September, 1901, containing the admirable article of Thomas and Roux. Their

paper seems to render what I have written quite superfluous, because it is so conclusive as to render discussion profitless. These authors made a complete and exhaustive post-mortem examination of one of the patients reported clinically by Klippel and Durante—one of Marie's basal cases. They found a small central nervous system, especially small cord and nerve roots. With the microscope were revealed: some atrophy of the gray matter of the cord, especially the columns of Clarke and root of the anterior horns; atrophy of the nucleus of the lateral tract in the medulla; partial degeneration of the posterior columns, principally of the columns of Goll in the cervical region; degeneration of Gowers' tract in dorsal and cervical regions and degeneration in the central part of the restiform body. The small size of the nerve roots (anterior and posterior) was most pronounced in the lumbosacral region, and was due not to degeneration, but to the exceeding fineness of the nerve fibers. The cerebellum was normal.

In this paper I first learned that two pupils of Marie have reported the post-mortem findings in another of Klippel and Durante's patients. Apparently there is some confusion in Marie's camp for, strange as it may seem, the first, Vincelet,⁴³ regards the case as one of Friedreich's disease while the second, Svitalski⁴⁴ calls it hereditary cerebellar ataxia. The former found a small cord, sclerosis of the posterior columns well marked in the lumbar region, less in the dorsal region. In short, changes much like those of Friedreich's disease with something added. The latter found in the medulla degeneration of the direct cerebellar tract and the nucleus of the column of Goll. The remainder of the medulla was normal, but small. In the pons there was diminution of the fibers of the middle cerebellar peduncle and thickening of sub-ependymal tissue of the fourth ventricle and aqueduct. The number of convolutions of the cerebellum was finished; the fissures were deep and wide. Minute changes were found between the molecular and granular layers of the cerebellar cortex, and the central white matter was small and stained poorly. There was proliferation of connective tissue in the right optic

nerve. In nerve roots and peripheral nerves the number of large fibers was diminished, and the small fibers were increased. It is quite evident that the cerebellar changes were less pronounced and of less significance than those in the cord.

And finally, Dr. Lewellys F. Barker informed me a few days ago that the cords from Brown's two cases show well-defined degeneration, while the cerebellar findings, so far as the examination has been made, are extensively negative.

Doubting the existence of a disease meriting the title hereditary cerebellar ataxia, I have still for convenience called my case by this name. Should there really be such a malady, I am naturally in doubt as to whether I am reporting an example of it.

A. V. B. was first seen December 3, 1899, through the kindness of Dr. E. M. Smith⁴⁵. He was almost nineteen years old at that time. As far as known the ancestry is excellent. Both parents are living and in good health. They are not blood relatives, there is no discrepancy in age (now 53 and 58), and no evidence of either having had syphilis. The mother, married at eighteen, has been pregnant nine times. All children have been boys. The first child is said to have died of a fall and brain fever. At seven months he fell from a high-chair, was immediately limp and then stiff, but soon regained consciousness and apparently suffered from no grave consequences. The mother states that he was not so bright and lively after the fall, and about three weeks later developed cerebral symptoms, and died at eight months. The second child had congenital heart disease, was a "blue baby" and died of exhaustion at three months. The third child was normal, grew to manhood and was perfectly well when I first saw my patient. Some months later he contracted scarlet fever followed by nephritis, of which he died. The fourth pregnancy was terminated by a miscarriage in the third month, cause unknown. Eight years after the birth of the third child the fourth was born, the miscarriage having intervened. This boy was Frank of whom I shall speak presently. Fifteen months after this birth the sixth pregnancy resulted in a still-birth at eight months, presumably from over-lifting. About four years after Frank, my patient, was born. The next child followed in three and a half years, is living, and a picture of health. The seventh child, result of the ninth pregnancy, died at eighteen months, of bronchitis and cholera morbus after an illness of four weeks.

The boy, Frank was apparently entirely normal as a young child, and at the usual age entered school where he seemed to be quite up to the average in intelligence. When ten or eleven years old a gradual change in character began. He became very timid and must have shown some peculiarities, as the other children teased and pursued him. Nevertheless, he continued at school until about fifteen years old, but made very little progress. When about thirteen he developed a *penchant* for grubbing in garbage boxes, played truant, and by degrees became a good-natured, weak-minded runabout. At the age of four or five he had been struck by a street car, and when fifteen or sixteen fell down a flight of stairs, but neither of these accidents was severe or immediately followed by bad effects. Unsteadiness in walking became apparent when he was sixteen and a half years old, and was progressive. Incoördination soon invaded the upper extremities, and it is distinctly stated that the left side (leg and arm) was much worse than the right. This disability of the left arm and leg seems to have been in part parietic and not due entirely to ataxia. Within a year of the beginning of motor trouble the left side was nearly useless, and after a time developed contractures. Speech began to be affected six months after the ataxia began, that is, three and a half years before death, and gradually grew worse until it was quite lost shortly before death, the patient uttering only unintelligible sounds. Incoördination was steadily progressive; he deteriorated mentally to the point of idiocy; finally became extremely emaciated and completely paralytic, and died at the age of twenty. There is no history of eye symptoms. Incontinence was present during the last year of life, and bed-sores appeared before the end. It may be worthy of mention that once during his illness when he scalded the right leg by spilling soup upon it, apparently no pain was felt.

My patient was born at full term four years after this older brother. The labor was normal. He learned to walk and talk at the proper age, did not wet the bed later than normal, cut his teeth sufficiently early, had neither eruptions, convulsions nor any severe illness. As a child he seemed to be quite as other children, attended the public schools until fourteen or fifteen years old, where his standing and progress were satisfactory, and then procured a position as messenger and general utility boy in a store, where his services were also satisfactory until about a year and a half before my first examination. That is, the trouble began three and a half years ago. The first symptom to appear was unsteadiness of gait, to which were soon added general nervousness and ir-

ritability. He then became forgetful, so that it was necessary to write down the details of errands and the like. These signs of mental impairment dated back nearly a year. Since that time progress for the worse had been rather rapid, and four to six months before, it was noticed that speech was affected. When examined, his mentality seemed to be about that of a child of six or eight. He could read, but with numerous mistakes; he was unable to repeat even the "twos" of the multiplication table, and memory was very defective. Irritable, rebellious, transiently morose, changeable, tickled by trifles, he presented the clinical picture of an ordinary imbecile. Speech was slow, mouthing, a little indistinct and rather hesitating, not scanning, not explosive, and, on the whole, scarcely more imperfect than the mental condition. In fact, it much resembled that of some patients with infantile cerebral paralysis and imbecility. It lacked the tremulousness, slurring, varying voice and omissions of general paresis. General nutrition was apparently but little interfered with, although the boy was rather thin. Thoracic and abdominal viscera were normal, as were also the sphincters. The gait was distinctly ataxic and somewhat, far from purely, of the cerebellar type. In standing, incoördination was easily apparent, although the boy could stand with feet together. In neither station nor progression was the ataxia increased by closing the eyes, and in walking he did not regard the floor as does a tabetic. The upper extremities were also incoördinate, although to a less extent than the lower; in picking up small objects the hand "hovered" for an instant before prehension, and excess of movement was often apparent. There was no tremor of any part, in action or at rest. During speech, over-action of the facial muscles was very evident, predominating at different times in different parts of the face. Often this gave an appearance of one-sided paresis really not present. Indeed, there was no paralysis to be found anywhere; neither was there atrophy or deformity. The arch of either foot was unusually high, but could not be affirmed to be pathological, the toes were normal in position and motion, the spinal column normal. Owing to the mental condition the examination of sensation was not very satisfactory, but apparently it was normal. Certainly no marked defect was present. Pain had not been a symptom at any time. The pupils were large, equal, slightly irregular, did not respond to light and very slightly, if at all, to accommodation. Movements of the eyes, vision, the fundi oculi and hearing were normal. The deep reflexes were all exaggerated except the jaw-jerk which could not be elicited. Ankle-clo-

nus was absent, although the ankle-jerk was so excessive as to lead me to expect its presence. At this time and for some months thereafter he amused himself a great deal of the time by copying verses. When first seen this was done with fair accuracy and good chirography. A specimen two months later showed mistakes of omission and commission and some irregularities in penmanship. The appetite was capricious, but on the whole good, bowel and bladder functions said to be undisturbed, deglutition free, sleep normal.

A diagnosis of hereditary cerebellar ataxia was made, but to be on the safe side an active course of anti-syphilitic treatment was advised. Accordingly, Dr. Smith put him on inunctions of mercury and rapidly increasing doses of potassium iodide, but the patient soon grew worse, in fact became bed-fast from weakness, and the treatment was stopped. He quickly regained almost his former condition and then gradually lost ground.

Examination November 22, 1900, nearly a year after the former one, revealed simply moderate physical and mental change for the worse. He was thin and rather pale, walked with the feet rather far apart and with short, irregular, rather jerky, stiffish steps, steadying himself by pieces of furniture as opportunity offered, although he could walk without support of any kind. The gait was not at all typical of cerebellar disease, having very little of the wide swaying and body reeling in its make-up. Ataxia of the upper extremities was slightly worse than before. Tremor was still absent. The high arch of the feet had not changed. On stroking the sole of either foot the great toe was at once hyperextended, the movement differing from the typical Babinski sign in that it was very prompt, and thick. This reflex was more pronounced on the left side. Ankle-clonus was present on the right side and an indication of it on the left. Speech was slow, indistinct, with an occasional stutter and much "mouth-ing"—not unlike that of a very drunken man. Funeral was pronounced fun'l; November, Nowember; Sedgwick, Sed'k; electric lights, 'lec' 'ligh'. Overaction of the facial muscles was marked. The lips were pouted, or retracted, corners of the mouth drawn back, brows strongly elevated, then drawn down and together, etc. Frequently the first two or three words of a sentence were repeated, before the whole was delivered. Mentally there was little change. To questions in figures he responded as follows: "6 times 6 equals 66; 5 times 5 equals 25; 3 times 25 equals 75; 6 times 7 equals 49; 2 times 8 equals 16; 4 times 25 equals a dollar; 5 times 25 equals a dollar and a quarter." Despite the dementia and

facial overaction, at times almost amounting to contortion, the face was very far indeed from being expressionless. When he was pleased and laughed, the face lighted up, and when displeased or resentful the play of expression was equally striking. When at rest the features certainly lacked expression.

During the past year degeneration has been more rapid. The boy now (November 1901) is much emaciated, eyes sunken and not entirely closed in sleep, face pale and smooth as if the skin were stretched over it. The tongue is coated and there are sordes on teeth and lips. This condition may be due in part to obstinate constipation. When the bowels move there is incontinence and consequently the mother, who has entire care of him, causes an evacuation only about once a week. Incontinence of urine is also present. Ataxia has reached a degree making it impossible for him to walk without assistance and almost impossible for him to feed himself. Speech has been steadily growing worse until now it may be said to have disappeared. He apparently attempts to talk but only inarticulate sounds result; yes and no are at times barely distinguishable. Phonation is intact. Occasionally he has shouting or screaming spells when he can be heard all over the neighborhood. Without ascertainable cause he becomes destructive, tearing bedding or his clothes to shreds. He is never violent but may refuse food or resist being dressed, undressed or cleaned, and on such occasions may attempt to scratch or even bite. Besides the screaming spells, there are times when he repeats the same expression, as "la-la-la," over and over. The brother did the same thing, and before losing speech would repeat a word in the same way, sometimes for minutes together without intermission. As the forgoing indicated, A. is now demented. He seems to understand very little, but I am sure recognizes me, and his face lights up much as it did at first, with excessive rising of the eyebrows, opening of eyes and wrinkling of forehead. Pupils and deep reflexes are unchanged, except that at my last visit I could get no ankle-clonus. Muscular strength is fair and tremor absent as heretofore. Vision seems to be good. A few weeks ago he could recognize his name written with a pencil in an ordinary hand, and made a not altogether unsuccessful attempt to copy it. At that time he could not articulate a word. His mentality, therefore, is quite above his power of speech.

In this case the progressive mental failure, rigid pupils, ataxic gait with exaggerated reflexes and indistinct speech,

together with the history of miscarriages and deaths in infancy, at once suggest precocious general paresis due to inherited syphilis. On this supposition the elder brother may have had the same disease, or, bearing in mind the hemiplegia, syphilis hereditaria tarda. Remembering that precocious paresis is apt to be atypical, I have had this possibility constantly in mind. Even now I have no inclination to be dogmatic on the subject, but the case has never looked to me like general paresis, and I think that diagnosis could not be maintained. Adequate evidence of syphilis in the parents is wanting. What Freud⁴⁶ noticed in the family of his diplegics and called *eine Neigung zur Leichtsterblichkeit* (vital vulnerability), in my opinion explains the early deaths and miscarriages in the family as well as does the theory of specific disease. Incoördination distinctly antedated mental deterioration, and has throughout dominated the clinical picture. No trace of a delusion has ever been detected; tremor of lips, tongue and hands has been consistently absent. In addition, absence of the Argyll-Robertson pupil, of analgesia of the legs, of good-natured self-satisfaction and mental depression alike, would tend to exclude paretic dementia. Extreme over-action of the facial muscles is no part of the symptomatology of this disease, and by this time there should be more motor feebleness than is the case.

Granted that there is very considerable resemblance of my case to general paresis, it is but reasonable to suppose that the histological changes are not widely different from those of the latter disease. But how is it possible to reconcile such a state of affairs with cerebellar wasting as the anatomical basis of hereditary cerebellar ataxia? It is not possible. It were as reasonable to call my case merely one of Friedreich's disease with mental symptoms. In the light of all the symptoms exhibited by Marie's basal cases and by those since reported, but especially in the light of discovered changes in the central nervous system, it is almost preposterous to ask one to believe that the whole symptom-complex is caused by degenerative changes in the cerebellum. In this connection, too, it is well to remember that the combined

sclerosis of Friedreich's disease is far from explaining all the symptoms of that disease. To account for the nystagmus, disordered speech and changed facial expression we are almost forced to assume changes at least as high as the pons and cerebellum, and when mental defect appears, as is sometimes the case, still higher involvement must be present. If by hereditary cerebellar ataxia we may understand an hereditary, or at least a family, disease of those systems of neurones, afferent and efferent, having to do with the cerebellar function, the name could be provisionally tolerated. Otherwise, it should be at once suppressed or restricted to a class of cases not yet discovered. For the present it would seem wise to follow the example of Sanger Brown and confine ourselves to the simple term "hereditary ataxia." Five or six years ago⁴⁷ in reviewing Londe's monograph, I said: "In brief, hereditary cerebellar ataxia is to be distinguished clinically from Friedreich's disease by the absence of certain symptoms, all of which it may in time take on, and by the frequent presence of eye symptoms, generally absent in the latter; but the latter may in turn take on these same ocular symptoms. Pathologically we have in hereditary cerebellar ataxia an atrophy of the cerebellum, with at times certain changes in the spinal cord; in Friedreich's disease, these same cord changes and at times (not always, as Senator would have it) an added cerebellar atrophy. It seems reasonable, then, to conclude that in these two affections we have but one disease, affecting a sensori-motor system concerned with coördination and equilibration, and that as one or the other part of the system is first or exclusively affected, so the clinical picture will vary." Later I learned that Edinger⁴⁸ had expressed practically the same opinion. This opinion must now be modified to the extent of excluding cerebellar atrophy without involvement of the cord, as there have been no autopsies which would support such a supposition. It should also be amplified to the extent of distinctly affirming at least occasional cerebral involvement.

The relation of mental failure to the somatic signs is yet to be worked out *de novo*. Knowing as little as we do of the

connections of the neurones of motion, coördination and equilibration with those of the higher mental faculties, to discuss why some patients with hereditary ataxia should become demented and others remain intellectually intact to the end, were mere speculation. Whether the cerebral degeneration, necessarily underlying the mental failure, occurs as part of a huge system disease or simply as a coincidence in an organism prone to deterioration because of inborn frailty, or because of two quite distinct inherited tendencies, or by reason of some law of associated dissolution as yet unsuspected, is not to be stated at present.⁴⁹

¹Marie, *Semaine Médicale*, p. 444.

²Fraser, *Glasgow Medical Journal*, 1880. Fasc. 1.

³Nonne, *Archiv für Psych.*, 1891, xxii, p. 283.

⁴Sanger Brown, *Brain*, 1892, p. 250.

⁵Klippel and Durante, *Revue de Médecine*, Oct. 1892, p. 745; *Semaine Médicale*, 1892, p. 467.

⁶Homén, *Archiv für Psychiatrie*, 1892, Bd. 24.

⁷Freud, *Neurolog. Centralb.*, 1893, pp. 512 and 542. *Higier. Deutsche Zeits. f. Nerv. ix.*, p. 1. An interesting and complete paper with very full literature. Haushalter, *Rev. de Méd.*, 1895, p. 434. Bouchard, *Rev. Neurolog.*, 1894, No. 1. Brower, *Medicine*, January, 1897.

⁸Ormerod, *Brain*, 1892, p. 268.

⁹Bernhardt, *Idem*, p. 278.

¹⁰*Archiv. f. Psychiatrie*, 27, p. 481.

¹¹Adolf Meyer, *Brain*, 1897, p. 276.

¹²Not made by Meyer.

¹³Brissaud, "Leçons sur les Maladies Nerveuses." Series of 1893-94, pp. 43 and 61. Brissaud and Londe. *Revue Neurol.*, March 15, 1894.

¹⁴Londe, *Semaine Médicale & Revue Neurol.*, October 1, 1894.

¹⁵"Héréd-ataxie Cérébelleuse." Paris, 1895.

¹⁶*Neurol. Centralb.*, 1890, p. 378.

¹⁷Seeligmüller, *Archiv f. Psychiatrie*, Vol. x., p. 222.

¹⁸Nonne, *Archiv f. Psychiatrie*, Vol. xxvii, p. 479.

¹⁹Menzel, *Archiv f. Psychiatrie*, Vol. xxii, p. 160.

²⁰Senator, *Berl. kl. Woch.*, 1893, p. 489.

²¹Schultze, *Berl. klin. Woch.*, August, 1894.

²²*Berl. kl. Woch.*, 1894. Nos. 28 and 33.

²³Fornario, *Annali di Neurologia*, 1891, Fasc. vi. Abstract in *Journal of Nervous and Mental Disease*, 1895, p. 381.

²⁴Oulmont and Ramond, *Mercredi Méd.*, 1895, p. 97.

²⁵Howard Gladstone, *Brain*, Winter Number, (No. 88) 1899, p. 615.

²⁶Starr, *Jour. of Nerv. and Ment. Disease*, 1898, p. 175.

²⁷Raymond, "Leçons sur les maladies du système nerveux. Series 1896-1897, p. 329.

²⁸Hodge, *British Medical Journal*, June 5, 1897, p. 1405.

- ²Paravicini, *Correspondenzblatt für Schweizer Aerzte*, 1901, No. 10. *Neurolog. Centralb.* Nov. 16, 1901.
- ³K. Miura, Japanese Publication. Abstract in *Brain*, 1900, p. 345.
- ⁴Lennmalm, *Nord. Med. Ark.*, 1897, N. F. viii., No. 29. *Neurolog. Centralb.* 1893, p. 560.
- ⁵Rossolimo, Abstract in *Neurolog. Centralb.*, 1898, p. 566.
- ⁶I. H. Neff, *Amer. Jour. Insanity*, Vol. 51, (1894-5) p. 365.
- ⁷Legrain, "Sur un cas d'héréd-ataxie cérébelleuse." Paris (Maloine.)
- ⁸Collins, *Med. Record*, December 21, 1895.
- ⁹Nolan, *Dublin Jour. of Med. Science*, Vol. 99, p. 370.
- ¹⁰Dejerine and Sottas, *Mém. d. l. Soc. de Biol.*, Vol. v, series 9.
- ¹¹Bäumlin, *Deuts. Zeits. f. Nerv.* Bd. xx, p. 265.
- ¹²Westphal, *Archiv für Psychiatrie*, Vol. xii. Strümpell, *Deuts. Zeits. f. Nerv.* Vol. xii, p. 115, and Vol. xiv, p. 348.
- ¹³Spiller, *Brain*, 1896, p. 588.
- ¹⁴Knoffelmacher, *Wiener med. Bl.*, 1897, No. 22, *Neurolog. Centralb.* 1897, p. 1064.
- ¹⁵Redlich, *Wiener med. Woch.* 1896, No. 19. *Neurolog. Centralb.*, 1895, p. 682.
- ¹⁶Vincelet, "Etude sur l'anatomie pathologique de la maladie de Friedreich."
- ¹⁷Svitalski, "Sur l'anatomie pathologique de l'héréd-ataxie cérébelleuse." *Rev. Neurol.* 1901, No. 3.
- ¹⁸He was shown to the Chicago Neurological Society, January 18, 1900.
- ¹⁹Freud, *loc. cit.*
- ²⁰Gould's Year-Book, 1896, p. 631.
- ²¹Real-Encyclop. d. gesammt. Heilk. 1895, Vol. vii, p. 117.
- ²²Since the above was written my patient has died. To the naked eye the brain was normal except that the cerebellum seemed rather small, not reaching to the posterior pole of the cerebrum.

ASSOCIATION OF HYSTERIA WITH INSANITY.*

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The relation of hysteria and the various forms of insanity is in some measure twofold: first, the insanity having hysteria associated with it; and secondly, hysteria in which insanity complicates. These borderland distinctions it is not always easy to differentiate, but it is very important to make them, since the medical jurisprudence and prognosis of the case will depend upon the right interpretation.

In this short paper, it is, therefore, the writer's intention not to dwell upon the diseases, insanity and hysteria, separately, but of those associations of the two which are the more confusing to the physician. Granting that hysteria is not, in the true sense, mental alienation in the vast majority of instances, it would seem better to keep clear of the phrase "hysterical insanity" as applied to a minimum of cases of a peculiar type of insanity associated with hysteria, and, indeed, a part of it, as H. C. Wood well points out. And in these cases, from a jurisprudence point of view, we must, of course, assume responsibility of commitment to an institution, though it will be much rarer to resort to this extreme than in other cases of mental disease. Dr. Folsom, quoted by Wood, gives a very lucid description of "hysterical insanity", in which the bizarre hysteria as usually seen in any other of its protean manifestations, whether of special sense, of sensory, or of motor disturbance, or of simulation of organic disease, is shown in the mental type of the queer psychosis in question, to wit: Folsom says hysterical insanity "is characterized by extreme and rapid mobility of the mental symptoms—amnesia, exhilaration, melancholic depression, theatrical display,

*Read before the College of Physicians of Philadelphia, December 4, 1901.

suspicion, distrust, prejudice, a curious combination of truth and more or less unconscious deception, with periods of mental clearness and sound judgment, which are often of greater degree than is common in their families; sleeplessness, grotesque and distressing hallucinations of sight, distortion and perversion of facts rather than definite delusions, visions, hypaesthesias, anesthetics, paresthesias—abortive or sensational suicidal maneuvers, occasional outbursts of violence, a curious combination of unspeakable wretchedness alternating with joy, generosity, selfishness—of gifts and graces on the one hand, and exactions on the other. One such person in the house wears out and outlives, one after another, every healthy member of the family who is unwisely allowed to devote herself with conscientious zeal to the invalid."

The writer has a case of hysteria under his care at the present time, in a young woman, aged seventeen years, who has been of good intellect, perhaps the brightest of a family containing seven children. During the past four years she has had one or two attacks in which she becomes secretive, goes without food for several days at a time, and in the last attack, beginning in January, 1901, the condition of depression was associated with hysterical outbursts of crying, although she never had a convulsion. Four weeks previous to coming under our care in November last, she suddenly, while in the picture of physical health, began to go without food, and this her family persists was kept up for eight days; she imagined also that the X-rays had been used upon her and had burned her; that blood had been taken from her head, and that her head had been "sewed up," and she was surely going to die. She persisted in taking no food in spite of family solicitations and of her physician, Dr. W. F. Haines, of Seaford, Del. A week previous to her coming to Philadelphia, she began to expectorate large quantities of blood-tinged mucus. We could get no speech from her, the patient casting her eyes in disdain toward the doctor and nurse, occasionally answering a persistent question in monosyllables. She had become physically wasted and anemic. (Hemoglobin, 80 per cent.; red blood-corpuscles, 3,800,000.)

Isolation from her family, forced feeding through the stomach-tube, static electricity, with massage, have greatly improved her physical condition. Occasionally she will have an outburst of temper only to relapse into apparently studied depression. It should be stated that there is no history of hereditary mental disease in her family. The absence of a true dementia in the symptomatology, but rather the pseudo-melancholia described, makes us place the patient in the category of hysterical insanity, and that the hope for cure will come through physical betterment and morale. While she has never shown suicidal tendencies, nor do I believe she would take her life, at the same time it may be advisable to place such a patient in an institution for mind diseases, which may tend more than anything else to arouse her conscience to the fact that she can help herself.

Dr. S. Weir Mitchell has given us the most comprehensive *régime* for the successful management of hysterical disease. It is not the purpose of this paper to rehearse treatment.

Having studied and reported a case of this hybrid disease (hysterical insanity), the more unusual psychosis, we should like to give a few facts, even if not new, which will aid in the diagnosis between the (a) hysteria complicated by insanity, and (b) insanity associated with the previous hysteria, as mentioned in the beginning. The most difficult pure mental disease to distinguish from hysterical insanity is hebephrenia, or the paranoic insanity of adolescence so-called. In this there may be physical signs of degeneracy. When these are absent the mental symptoms alone will be, perhaps, diagnostic—i. e., excitation of the depressive emotions in the form of a dementia rather than melancholia will prevail as the type of alienation, the patient being more disposed to wander away from home, to show no systemized studied desire to annoy her caretakers, and, withal, to show especially the lack of moral responsibility.

In a paper read before this College in January, 1900, what we considered a typical example of the latter form of mental alienation, which was diagnosed from hysteria by the differ-

ential points given above, seemed pretty clearly to be complicated at least by intestinal auto-intoxication, so that antiseptic treatment directed toward the alimentary canal was a measure added as an adjunct to forced feeding that cured the patient, if we may call it such, since no relapse has taken place in over two years. Intestinal antisepsis in the case reported to-night has seemed to better the physical state, for she is gaining weight, and pallor is giving way to a pink skin.

Hysteria as a clinical entity may develop, as is well known, beyond the essential stigmata of this psychosis, three aspects: first, the emotional element more particularly; secondly, the physical state, such as paralysis, sensory or motor; and thirdly, the clinical side may be specially shown in disturbance of organs such as the heart, stomach, etc. In our experience this first subdivision—that is, of hysteria without physical or objective symptoms—is the type that may be complicated more frequently by insanity of one form or another, and this is usually a form of mania. Such a case we have recently seen, where the mania with delusions followed pronounced hysteria due to overwork, the patient having been hysterical long before insanity set in. Forms of delusional insanity of slow onset in the hysterical subject are more likely to occur, however, where the mind is given suggestion by some physical defect, as in cases of hysteria with anesthesia or a motor palsy in the symptom-complex. The auto-suggestion through the paralysis mentioned on the hysterically enfeebled mind may produce, therefore, a true delusional insanity which may be quite intractable after recovery of all other evidences of hysteria *per se*. This is also true of the hysterical cases of the third group—that is, with symptoms referable to various organs of the body and in proportion as hereditary influences are of a markedly neurotic kind—as, for instance, in a woman under our care at the present time who has the delusion of having cancer of the breast, even after the physical demonstration has been made of its absence, and who promptly transferred the delusion to one of the stomach during a recent attack of influenza of gastro-intestinal type. This woman is eminently hysterical, and we might say, a case of de-

lusalional insanity. The heredity being good, however, if the hysteria can be cured by suggestion and general upbuilding of the system, we feel the patient will recover from the mild delusional alienation.

To make it clear that hysteria is engrafted upon an insanity is the more difficult problem. Since we are disposed to interpret confusion, delusion, or exaltation as symptoms of the mental disease, it will be practically impossible to determine hysteria established upon a subacute mania. When it comes to melancholia or dementia, it seems to us it is impossible to distinguish a hysteria that may complicate the mental condition and produce, therefore, the picture of insanity *plus* hysteria. Such a state is different, as mentioned in the beginning of this short paper, from hysterical insanity, as we have tried to make plain; and distinct from hysteria plus insanity (usually a mania occurring in the hysterical subject.)

This subject is thought fitting to be presented more from a prognostic point and the jurisprudence aspect, since it is often most difficult to decide when a case should be committed to an institution for the treatment of the mind; and this the more important, because the presumed stigma of being committed to an asylum does exist among the laity, so it is our duty to keep out of the asylum the case that will recover by private treatment. We must weigh the family history and physical condition of the patient before committing any case of mental disease to an asylum, but we should hope to be the last not to commit the case that is likely to do injury to himself or others. Even in the case of hysterical insanity, so-called, it may be desirable to commit the patient as a *dernier ressort*. Sometimes these patients may commit suicide from mere devilishness more than from any true insanity, as in the case referred to at the outset; and if this girl does not improve we shall deem it wise to commit her to an institution within a month. The more closely we study the individual case of alienation the less easy it is to decide the prognosis, unless we *do* weigh seriously the varying symptoms (frequently confused) of that bizarre disease hysteria so frequent-

ly associated with insanity, as it has been our effort to emphasize.

If this short contribution will but stimulate a desire and endeavor to seek for the hysterical element in insanity and the close individual study of the case, it will not have been in vain. The one aspect that hysteria is apt to take in insanity, besides its well-known grotesque features, is exemplified by the entering into any case of mental disorder of a large element of the personal desire to trap the examiner, and the patient frequently shows her hysterical mental state in the spirit best manifested by the non-medical word *disdain*.

American Neurological Association

A CASE OF CERVICAL AND BULBAR TABES WITH NECROPSY.

(Abstract.)

BY WILLIAM G. SPILLER, M.D.

AND

S. SOLIS COHEN, M.D.,

A case in which some of the most important symptoms were: Nocturnal incontinence of urine beginning in 1872, drooping of the right upper lid which could be overcome voluntarily, variation in the size of the pupils from time to time, paresis of the facial muscles, difficulty of mastication and deglutition, atrophy of the tongue, disturbance of sensation, especially for temperature and pain; sharp pains in the abdominal region and lower limbs, grayness of the optic nerves and loss of reaction of the irides to light and in accommodation. Ataxia was not present and the knee-jerks were preserved. The posterior roots in the lower cervical and upper thoracic region and portions of several cranial nerves were degenerated. A clinical history of the case was published in 1889. Death occurred in 1900. A discussion of the cervical and bulbar forms of tabes was given, as very few cases with necropsy are found in the literature.

DISCUSSION.

Dr. C. K. Mills said that in cases of well-developed tabes of the ordinary type, that is, in cases in which the signs and symptoms of the disease are well-marked in the lower or upper extremities or both, bulbar symptoms occasionally develop, usually at a comparatively late period of the disease. Such cases are sometimes spoken of as bulbar tabes or cervico-bulbar tabes when the cervical cord is involved. Cases in which the lesions are those of tabes both

in character and position, and are present only in the bulb or in the bulbo-cervical cord, are noted, but are rarer than those in which bulbar symptoms come on in a case of ordinary type. He had however seen cases of both types.

In consultation with Dr. S. Solis Cohen he had several times seen the case which had been reported by Drs. Spiller and Cohen, and he was also present at the autopsy and noted the marked atrophy which was visible to the naked eye in the cerebrum, pons, oblongata and cord. In the early history of this case some of its features reminded Dr. Mills of syringomyelia. Indeed the syndrome of the case as recorded included among its most marked features dissociated anesthesia and atrophy.

The most recent case of cervico-bulbar tabes seen by Dr. Mills was in May of the present year, 1901, having been sent to him by Dr. C. K. Ladd, of Towanda, Pennsylvania. This case was also seen by Dr. Spiller in consultation with Dr. Mills.

The patient, F. L. M., was a married man, 44 years of age. For eight or ten years he had suffered at times with feelings of soreness and distress in the abdomen, especially on the left side. His eyes began to fail three years before coming under observation, and the sight was decidedly blurred in the left eye in the early part of 1900. In November, 1900, he lost sight in the left eye entirely. He was seen by several Philadelphia ophthalmologists, among others by Dr. Behrens and Dr. Pyle at the Wills Eye Hospital in June and September, 1900. The records of the hospital show that he had vertical hemianopsia and contracted fields; red-green scotoma in the left eye; the left pupil was two-thirds dilated, the right pupil one-third; the right pupil responded to light and the left to accommodation but not to light; both nerve-heads were markedly hyperemic and the lower border obscured; the left macular region was almost gray; ptosis of the right lid existed. The patient gave a history of glycosuria, but no sugar was found at the hospital examination. Later it was recorded that the right pupil responded to light in accommodation and convergence; that vision in the right eye was normal; in the left the man could count fingers at one foot. Eight or ten months before examination he began to have cutting pains in the arms and chest. The pains came and went, and he described them as neuralgic, but of short duration. His descriptions indicated that they were tabetic pains. On examination it was found that neither eye could be moved freely into the external canthus, and that the eyes in movements

from right to left sometimes failed to act consentaneously. The right iritic reflex was nearly lost; the left pupil was dilated and irresponsive. He was totally blind in the left eye.

His voice was somewhat hoarse, and he said at times when swallowing that he was attacked with choking sensations and coughing. This was particularly the case with liquids. He was examined by Dr. Geo. C. Stout, who reported that his chief lesion was paralysis of the abductors of the left side. The left arytenoid cartilage and left vocal cord were immovable, while the right abducted and adducted freely. Examination for sensation showed marked retardation of the senses of pain and temperature in disseminated areas about the shoulder girdle, left chest, and left abdominal region. He complained much of frequent feelings of discomfort and distress in a bandlike area which reached around the left half of his trunk from about the position of the lumbar vertebræ to the median line in front. In this region were areas in which retardation to pain was present, although the sense was not lost. The Babinski response was not present. Knee-jerks were about normal. The biceps-jerk was well preserved on each side, the triceps-jerk was almost absent on each side. Station and gait were good, and the patient had no neuralgic or other pains below the waist. The bladder was unaffected. The man was very lean, but no distinct atrophy of special parts of the musculature could be determined. His tongue was wasted and showed no fibrillar tremor. He was tested for all forms of sensation with negative results. He could use his hands and fingers without special awkwardness or difficulty. If any ataxia were present in his upper extremities it was very slight. Smell, taste and hearing were not tested.

Dr. H. M. Thomas asked Dr. Spiller what the disturbances of articulation were. He had often thought that there ought to be very marked disturbances of speech in cases of tabes where the upper cervical and bulbar roots were affected. He did not hear any mention of such disturbances, and he did not know whether in similar cases ataxic disturbances of articulation analogous to the disturbance of motion in the limbs have been described.

Dr. Jacoby said he was rather surprised in listening to Dr. Spiller to hear the view expressed, which is certainly corroborated by his investigation in literature, that these cases are so infrequent. Dr. Jacoby had in his experience had no cases which had come to autopsy, but clinically cases of tabes beginning in the cervical region certainly did not seem to him to be very infrequent. He could recall two cases that

he had had under observation for years, and which he had been able to follow from their very beginning. Involvement of the trigeminus existed; both cases beginning with analgesia in the face. The cases were of gradual development, all the other symptoms of tabes beginning above and going down. This form of development he had seen not infrequently, so that now he was always suspicious in every case of involvement of the trigeminus alone without any other symptoms, that we may be dealing with a case of tabes superior. Another case that he had seen was one of involvement of the trigeminus with implication of the eighth nerve. Those were the only two symptoms, analgesia in the trigiminal territory and beginning deafness, which were present in the beginning, yet in no great number of years the case developed into one of pronounced tabes. Whether this "involvement" of the eighth nerve was actually a direct involvement of the nerve, or was a deafness due indirectly to trophic disorders in consequence of sensory involvement, it was of course impossible to say. Dr. Spiller had not spoken of any involvement of the eighth nerve in these cases, and he would like to hear from him whether he had found any such beginnings, whether early deafness is one of the frequent symptoms of a beginning high tabes. The point he wanted to emphasize is that clinically he did not think these cases are as infrequent as we would be led to expect from the report given.

Dr. Collins shared Dr. Jacoby's opinion concerning the frequency of high tabes, and, therefore, his astonishment to hear that Dr. Spiller had been able to find so few cases in the literature. In speaking of this matter with Dr. Dana and Dr. Hammond, Dr. Collins said he saw on the average about twenty cases of tabes a year in his private practice and that he had felt very sure that in this number there were two cases of high tabes. He was unwilling to abide by that statement now after having heard Dr. Spiller, but he was sure that he was entirely within his experience when he said that in a study of 100 cases of tabes, which he had recently made, in order to get some data bearing upon the prognosis of tabes, he had records of five cases of cervical tabes.

The second point in the discussion of the paper that he desired to refer to was that it seemed to him that in this case we have an example wherein the toxine of syphilis (or the poison occurring with syphilis) has had its destructive activity upon two sets of the fibers, motor and sensory; a condition which Dr. Collins thought is rarely seen. In the specimens submitted there seemed to be nearly as much degeneration in the motor as in the sensory neurones.

The third point in the discussion that he should like to make is that this case was in reality from a clinical standpoint one of bulbar paralysis. Leaving aside the fact that in all cases of tabes there are mental symptoms (in cases of high tabes the mental symptoms seem to be as it were transitional between the mental symptoms of tabes and those of general paralysis); the mental symptoms of this patient were very much those of true bulbar paralysis, in which disease mild mental symptoms are almost always present.

Dr. Sailer wished to call attention to a case he saw about two years ago in which one of the symptoms was so prominent as to lead to a variety of false diagnoses on the part of physicians who saw the patient. He was a man about forty, denied having had syphilis, had a number of healthy children, but admitted sexual excesses in youth. The disease commenced with ptosis and diplopia and he had distinct Argyll-Robertson pupils. He also had slight pains in the arms, exaggerated knee-jerk, some difficulty in micturition and loss of sexual power, so that there was not a great deal of doubt regarding the diagnosis. The symptom which apparently predominated over all the others was a series of laryngeal crises that occurred regularly every night and were supposed by more than one of the physicians that he had consulted to be due to aneurism of the thoracic aorta. The patient would have intense dyspnea, severe cough very much like the aneurismal cough, and remained sitting up supporting himself for several hours in the early part of each night. The attack would then gradually subside and he would be able to sleep the remainder of the night. Dr. Sailer would like to ask Dr. Spiller if the occurrence of laryngeal crises in this condition is more frequent than in the other forms of tabes.

Dr. Spiller in reply to Dr. Thomas's question in regard to disorders of articulation said there was no mention in the history of the case. He had not seen the patient himself and could not answer the question.

In regard to the point concerning the frequency of cervical tabes: Dr. Spiller had made the statement that it was not to be supposed that he had included all the *clinical* cases of cervical tabes. Some are alluded to in the literature in a cursory manner, and he believed that cervical tabes occurs more frequently than we might suppose from a study of the literature, but the cases are often incorrectly diagnosticated. The papers devoted especially to tabes do not mention many cases of cervical tabes. Those of cervical tabes with necropsy however are very rare.

In regard to the involvement of the eighth nerve, Dr. Spiller could not reply in positive terms, but he was not inclined to attribute to it very great importance in differentiating cervical tabes and other forms of tabes.

Dr. Spiller did not believe that laryngeal crises are more frequent in cervical tabes than in other forms. He had had patients who had had laryngeal crises with the ordinary form of tabes. Dr. Spiller said that the spinal root of the fifth nerve is not infrequently implicated in the ordinary form of tabes, as he had the specimens from four of five cases in which the spinal root of the fifth nerve was distinctly degenerated.

REPORT OF A CASE OF CHRONIC HEMIANESTHESIA OF
OVER EIGHT YEARS' DURATION, RESULTING FROM
DESTRUCTION OF THE CARREFOUR SENSITIF
AND LENTICULAR NUCLEUS.

(Abstract.)

By F. X. DERCUM, M.D.,

AND

WILLIAM G. SPILLER, M.D.,
OF PHILADELPHIA.

The case was that of a mulatto who had been under observation at the Philadelphia Hospital with a right-sided hemianesthesia and right homonymous hemianopsia, persisting over seven years. The symptoms had followed an apoplectic seizure, the resulting motor hemiplegia being slight. The patient finally died of a second apoplexy, the lesion involving the right side of the brain. At the autopsy, an old cyst was found in the left hemisphere, implicating the *carrefour sensitif* and lenticular nucleus. The thalamus was intact, except in so far as it was implicated by secondary degeneration. The motor fibers in the internal capsule were merely slightly implicated. The affected area was studied by serial microscopical sections.

THE PHILADELPHIA NEUROLOGICAL SOCIETY.

November 26, 1901.

The President, Dr. James Tyson, in the chair.

Brown Séquard Paralysis.—Dr. Dercum presented a case of this form of paralysis resulting from spinal syphilis.

Dr. William G. Spiller said that the early appearance of the spinal symptoms after primary infection was of interest, as the man still had the syphilitic eruption on his body. The preservation of tactile sense was important. Probably in most cases of Brown-Séquard palsy, tactile sense is preserved on both sides of the body, whereas the temperature and pain senses are lost on the side opposite the lesion in the cord.

A Case of Myelitis exhibiting the Results of Coördination Exercises.—Dr. John K. Mitchell read a paper with this title, and presented the patient. (See page 34.)

Dr. Charles W. Burr remarked that he had seen this patient shortly after his disease had developed, and that the improvement since that time had been very great. The patient, at first, was very spastic, and walked with great difficulty; his knee-jerks were greatly increased, and he had ankle-clonus on each side, but no muscular wasting.

Dr. F. Savary Pearce said that he had seen this patient several times in the dispensary, and had been a witness of the great improvement that had occurred. On one occasion he had seen the patient crossing the street, and had observed the great difficulty he had in stepping up on the curb, on account of the extreme spasticity that existed. Dr. Pearce believed that the movements which had been described were largely responsible for the great improvement in coördination.

Dr. H. A. Hare inquired whether Dr. Mitchell had had the opportunity to investigate the question as to the frequency with which myelitis is a complication of typhoid fever.

Doctor J. K. Mitchell agreed with Doctor Hare that myelitis must be a very rare complication of typhoid fever. He had seen but one other case and that a doubtful one. He considered the present case a doubtful one, and he had been careful to state that the myelitis had followed typhoid instead of saying that it had been a consequence of the fever. It was to be noted that the myelitis had not appeared until at least two months of apparently perfect health had elapsed after the recovery from the typhoid. He thought it to be regretted that the spinal puncture had been unsuccessful, as an examination of the spinal fluid might at least have contributed some negative testimony.

Post-apoplectic Hemihypertonia.—Dr. D. J. McCarthy presented a patient with tonic spasms of the hand and foot on the same side, occurring at irregular intervals. This condition had developed after an apoplectic attack.

Dr. William G. Spiller remarked that this condition of post-apoplectic hemihypertonia was not well recognized. He had reported the first case in this country, and one other had been referred to by Dr. F. A. Packard. In these cases the contraction is not persistent. It varies in intensity from time to time. At one moment it

may be marked, and the next it has disappeared. There is not much motor paralysis in these cases. It is a condition of excessive muscular tonicity, and probably is the result of a lesion near, but not in, the motor tract within the cerebral hemisphere. The central motor fibers are irritated and not destroyed. The contractions are unlike those of athetosis or chorea.

Brain Tumor.—Dr. Wm. G. Spiller presented a patient with many of the symptoms of brain tumor.

Dr. Charles K. Mills thought it probable that this was a case of tumor in the motor region, cortical or subcortical. He wished to call attention to a diagnostic method which had been employed in a case under his care at the Philadelphia Hospital. The patient, a woman, had all the classical symptoms of brain tumor. Apparently, it was a large tumor, the central or initial portion of which was in the parietal region. Dr. G. E. Pfahler, one of the resident physicians, had made use of the X-ray apparatus and had obtained a shadow of the tumor in the region where it had been located by a study of symptoms and signs of focal disease. An operation for the removal of the tumor was done in this case, and the tumor was found in the region in which it had been believed to exist. A fuller report will be made later.

Dr. A. A. Eshner remarked that it might interest Dr. Spiller to learn that his patient had been at the Orthopedic Hospital before she came under his care. At that time there were present symptoms of right hemiplegia, with tremor in the upper extremity on that side. The case was at first regarded as probably hysterical in character, but subsequently it was concluded to have an organic basis. There was no record of an ocular examination.

Dr. Charles W. Burr said that in the early stage of many cases of brain tumor it was not surprising that the symptoms should be attributed to hysteria. In his own personal experience he had several times said that patients were suffering from hysteria when further examinations showed positive evidences of new-growth.

Dr. William G. Spiller remarked that it was easier for the physician who sees these cases in the advanced stage to make a diagnosis than for the one who sees them in the earlier periods. It was only after examining his patient several times that he became suspicious that the "tremor" might be a manifestation of Jacksonian epilepsy, and he had then urged her to come into the hospital.

Cholesteatoma of the Brain.—Dr. C. L. Allen presented a tumor of this character.

Dr. William G. Spiller said that these tumors are more likely to occur at the base of the brain, and they may exist without causing symptoms. He thought that it was a cholesteatoma because of its friability, its pearly luster, its position, the presence of numerous cholesterine plates, the large epithelial-like cells without nuclei, and the distinct layers of cornified cells. The recent paper of Dr. J. J. Thomas contains the description of three similar tumors.

Report of a Case of Aphasia.—This report was made by Dr. C. W. Burr. One peculiarity of the case was that only the important words of a sentence were spoken.

Dr. Charles K. Mills said that this patient had come into the hospital during his term of service, and he had made a somewhat elaborate study of his condition. The point of interest was as to the seat and extent of the lesion that had caused these strange speech phenomena. Dr. Dercum had a similar case some years ago, on which Dr. Mills thought a trephining operation had been done later.

Mary Putnam Jacobi had reported a similar case and others were on record. These cases impressed Dr. Mills with the fact that the cerebral speech zone, as he had long contended, was more complex than would be indicated by those who believe that we have simple percept centers, and motor speech and executive centers. He thought that these cases helped to show that between this region of percepts and of motor speech there is another region. He did not think that any lesion of the percept centers, or of the motor centers, or merely of the conducting tract between these simple centers would explain this case. It would be explained by some as a case of conduction aphasia. He was inclined to say that in this case the lesion was between what is termed the concept or naming center, and Broca's center—and that it was in this sense a conduction aphasia. This patient was never word-deaf. He doubted if it ever was a true case of word- or letter-blindness, at least of the "center" variety. He did not doubt that the man had apparent word-blindness and letter-blindness. The patient had not interference with the executive center for speech, and the evidence was not clear that Broca's center was involved, except as we recognise that all centers must have the axones which come from other regions come in contact with the cell-bodies of the region in question. A partial lesion of Broca's convolution could explain the case, but after all that is a conduction lesion in the proper sense.

An interesting fact was that this man in addition to the speech defect had had a number of attacks of monospasm affecting the face and arm and sometimes the leg, but the face most prominently. The region where the fibers cross from the temporal lobe to reach Broca's convolution is not known, but it is possible that they cross at the retroinsular convolution. A hemorrhagic or other lesion here might affect the neighboring region of the face.

Dr. F. X. Dercum thought that the explanation advanced by Dr. Mills was a most plausible one. A point in favor of conduction aphasia is that the patient preserved the simple associations. If these are started, he could go on as in naming the days of the week, the months, etc. It seemed to be a difficulty in bridging across the perceptive areas and the emissive area, rather than a lesion of either area. Just where the trouble was, was a matter of conjecture.

The case resembled one reported by the speaker some time ago. This was a case of hemiplegia in which a man had aphasia, total except that he had a fair memory for nouns. The patient was an engineer, and when asked as to his occupation would reply, "boiler, water, wood, coal, fire, steam." If asked as to his early life, replied, "farm, country, errands, work." He could also pick out words that were called for from a printed page.

Dr. William G. Spiller, who had seen this man a number of times, called attention to the fact that he had been carefully trained to speak. The case impressed Dr. Spiller very much like that of a child learning to speak. He thought that as a result of education the right speech center might have been developed, as the man was very young. In this case there had been no paraphasia, which is present in cases of sensory aphasia without motor aphasia.

Dr. Charles W. Burr said that he had tried in every way to prove that this man understood what he could not utter. When he saw C or D it was not that he understood but could not utter the sound, but the sign did not produce any idea whatever in his mind. X, B and O were the only letters that he could understand, and these he could pronounce. A few isolated words he read, not as words, but as

pictures. Dr. Burr believed that there was not only apparent word-blindness, but actual word-blindness. The patient gained somewhat under training, but when the training ceased, he lost what he had gained. He had now been training himself and was beginning to learn again.

The Direct Ventro-lateral Pyramidal Tract.—Dr. Wm. G. Spiller read a paper on this tract described by him in 1899, and stated that Stanley Barnes had recently found this tract degenerated in four cases of hemiplegia.

Dr. D. J. McCarthy said with regard to the tract reported by Russell, that it corresponded with a tract which he (Dr. McCarthy) found while working on a case of cerebellar lesion in Flechsig's laboratory. This tract corresponded very closely to that of Dr. Spiller, except that it was situated more anteriorly in the cervical region of the cord. It was followed up and found to have a lateral position to the olive. The presumption was that it went farther up through the pons. There were so many hemorrhages in the tissue that it was considered inadvisable to go on with the study of the case. Flechsig was of the opinion that this tract came from the cerebellum.

Dr. William G. Spiller remarked that there were a number of tracts situated in the ventro-lateral region of the spinal cord, and that unless they were followed to their origin, it could not be said what tracts they were.

CHICAGO NEUROLOGICAL SOCIETY.

November 21, 1901.

'Hereditary Cerebellar Ataxia with Report of a Case.—Dr. Hugh T. Patrick read a paper with this title. (See page 129.)

Dr. Lewellys F. Barker spoke of the functions of the cerebellum, referring to the development of knowledge on the subject and its present status. The views held by Haller, Rolando and Weir Mitchell (cerebellum as a center of muscular energy), by Flourens and Wagner (cerebellum as a center of coördinating voluntary movements), by Gall (cerebellum as center of sexual passion), and by Lussana (cerebellum as center for muscular sense), were successively mentioned. The careful studies and experiments of Luciani were taken up in some detail, and the opinions of the Italian investigator upon the sthenic, tonic and static action of the cerebellum reviewed: the researches of Ferrier, Schiff, Risien Russell and Thomas, were referred to. The weight of evidence at present is in favor of the view that the cerebellum is above all an organ upon the integrity of which the maintenance of normal equilibrium, under ordinary circumstances, depends.

An analysis of the cases in human beings in which the symptoms seen during life could, as a result of post-mortem examination, fairly be referred to atrophy of the cerebellum, shows that the cerebellar symptom-complex, as met with in man, corresponds very closely to that producible experimentally in animals.

The structure of the cerebellum was described at some length, the description being couched in terms of the neurone conception. The central neurones of the cerebellum, as well as the cerebellopetal and cerebellofugal conduction paths were discussed. The speaker expressed the opinion that a large part of the confusion existing among clinicians with regard to the nomenclature of nervous diseases depends upon the effort which is so often made to classify diseases according as the lesions accompanying them are distributed chiefly in one or another of the coarser macroscopic subdivisions of the central cerebro-spinal nervous system. The time was past, he thought, when we could satisfactorily use the terms "Diseases of the Spinal Cord," "Diseases of the Cerebellum," etc., as headings under which to group the special diseases. A much more rational classification is that based upon the conduction paths and sets of neurone-systems involved in the pathological process. Thus diseases in which the *systema neuronicum spino-cerebellare dorsolaterale* is degenerated affect the cerebellum as well as the spinal cord. The macroscopic subdivisions of the central system are so intimately connected with one another by means of neurone-chains and neurone-complexes that a separation of the diseases of one from diseases of another is as a rule futile. When one considers the large number of neurone-systems connecting the cerebellum with the spinal cord and rhombencephalon on the one hand and with the cerebrum on the other, the number of possible permutations and combinations as regards lesions is seen to be very great. Why should not the clinical picture presented in different cases of diseases affecting the cerebellar neurones be extremely variable? The wonder is not that we have different types of

disease which are somewhat closely allied to one another; it is much more that the clinical pictures presented in the various cases are so much alike as clinicians assert that they are. Possibly, when our methods of clinical differentiation have become more refined, we shall be able to speak more confidently than we can at present with regard to the exact neurone-systems involved in a given case, or series of cases.

Dr. Sanger Brown agreed with Dr. Patrick in asserting that Marie was not warranted in making the statements that he did; still in taking a broader view of the subject, and in accordance with the theory advanced by Dr. Barker, it was not a bad designation to refer to this disease as hereditary cerebellar ataxia. Marie was perhaps warranted in saying that in this disease the functions of the cerebellum were conspicuously involved. Whether the incoördination means an involvement of the cerebellum, Dr. Brown did not know definitely, but that was the popular idea entertained by the profession. He thought there was a marked difference clinically between the series of cases that he reported and the series first reported by Friedreich, particularly as to the onset and progress of the disease, and that it was well to make a clinical distinction. There might be a variety of types of the disease in certain families—that is to say, certain parts of the central nervous system would show at a certain age defects, and he did not think the time had come when it was safe to classify these lesions under very hard and fast lines.

Referring to the remarks of Dr. Barker, it was well established that the functions of the cerebellum, judging from experiments upon animals, could be vicariously performed fairly well. If certain neurones connected with the cerebellum undergo injury or degeneration, if the disease were limited to particular neurones, or if the cerebellum were mainly at fault, the patients would not become progressively more and more ataxic. In the series of cases reported by the speaker, the patients became progressively more and more ataxic. They became somewhat weak, but if they could use other parts of the nervous system, they certainly had years to get over that particular defect, but they became steadily worse.

Regarding the case of Dr. Patrick, Dr. Brown agreed with Dr. Patrick in many respects, although he was impressed with what James Collier and someone else stated in *Brain* some three or four years ago, in an elaborate report on diplegia, in which was reported a case similar to the one detailed by Dr. Patrick, only the cerebellum did not seem to be attacked so markedly in their case. He thought that case could be classified with other cases, if it were assumed that the functions of the cerebellum were more markedly disordered, or that the degeneration extended to the cortex of the cerebellum as well as the cerebrum.

Dr. Sydney Kuh pointed out some slight discrepancies which exist between the results of experimental work as to the functions of the cerebellum and clinical experience. The result of experiments would seem to show that the tendon reflexes are exaggerated after injuries to the cerebellum. It was known from clinical experience that there is no localization of a lesion within the cranial cavity which is so frequently associated with loss of the deep reflexes as a cerebellar lesion.

As to the influence of the vermis, when Dr. Kuh studied medicine he was taught that any part of the cerebellum might be destroyed without the manifestation of any symptoms, with the exception of the vermis. He had had occasion to examine the cerebellum of a

patient who had been under the observation of Professor Vierordt and his assistant for physical diagnosis. The patient was an old man, who came complaining of violent pain, and upon examination they found a tumor of the liver. The patient's age and appearance justified a diagnosis of carcinoma of the liver and he was under observation and treatment for a long time. Dr. Kuh was perfectly safe in stating that no such symptom as cerebellar ataxia or any gross nervous symptom could have been overlooked by these two gentlemen. The patient was treated with hypodermics of morphine. The case seemed absolutely hopeless, and nothing but symptomatic treatment was possible, and after one or two doses of morphine the patient became comatose, and died.

Post-mortem examination revealed, instead of carcinoma of the liver, secondary to a supposed carcinoma of the stomach, a large angio-sarcoma of the liver. On opening the cranial cavity an angio-sarcoma of the cerebellum was found. The tumor had destroyed practically every part of the superior vermis, the layer covering the tumor being hardly any thicker than an ordinary card. It did not seem to the speaker that very much of the function of that portion of the nervous system was preserved. It is true, the tumor, as it appeared at the necropsy was undoubtedly larger than it had been a short time before the patient's death, because death was largely due to hemorrhage into the tumor.

Dr. Kuh was particularly pleased to hear what Dr. Barker had to say regarding the present classification of nervous diseases. Even if we knew nothing about the neurones, or the anatomy of the nervous system, clinical experience alone should have taught members of the profession long ago that there is no such thing as peripheral, spinal or cerebral disease; and in spite of the anatomical researches extending back to the time when physicians hardly dreamed of a neurone that showed involvement of the nervous system in certain diseases, they are still classified in the same way.

Dr. Daniel R. Brower said it was impossible to make fine distinctions between several forms of hereditary cerebellar ataxia. However, this was still being done by some neurologists. He reported at his clinic at the County Hospital a year ago a case that manifested certain symptoms suggestive of hereditary cerebellar ataxia, for the reason that the cerebellar connections were in some manner interfered with. It was not an ordinary case, inasmuch as the reflexes were so exaggerated, the eye symptoms pronounced, and the gait more like the gait attributed to cerebellar disease; therefore, he called the case one of cerebellar ataxia.

Dr. Elbert Wing agreed with Dr. Barker in regard to the nomenclature of diseases. Physicians had been too exact in giving names to diseases, and in describing exactly the different pathological locations. A classification such as Dr. Barker had alluded to was necessary in clinical work. The old classification would be gradually abandoned, as more definite knowledge was obtained.

Dr. Hugh T. Patrick said, in referring to the remarks of Dr. Barker, that five or six years ago in writing an extended review of a monograph on hereditary cerebellar ataxia, he tried to express the same views that were presented by Dr. Barker, but did not do it so well, in that he tried to say, in all probability, the various diseases, including Friedreich's ataxia, were caused by progressive degenerative changes in nerve structures which were associated in function, and that the inception of the disease would vary in accordance with the particular set of neurones first involved. The clinical picture

varied in accordance with the direction in which the disease progressed, and its extent. This was the conception which is taken now of a variety of cases, including those in which the mental deterioration is considerable.

Dr. Barker stated, in connection with the progression of the symptoms in the cases suggested by Dr. Brown, beginning in youth, that the cerebellar disease ought to be compensated for largely by the vicarious activity of other parts. It must be assumed that disease is not stationary, and that, in all probability, group after group of neurones become involved, and those standing nearest in function and relation are most likely to assume vicarious function. He agreed with Dr. Wing in regard to attempting to localize or ascribe things exactly to one organ. On the other hand, he believed we shall not be far wrong in attempting to localize diseases more exactly than we have heretofore by systems of neurones and conduction-paths. An effort should be made in every case to correlate the clinical symptoms with changes in the neurone-systems. If it is said that such and such neurone-systems are involved, and such others are intact, then make careful autopsies and study the pathology from the same standpoint; data would then be accumulated which could not be obtained by present methods.

Periscope.

La Nouvelle Iconographie de la Salpêtrière.

(1901, No. 4, July and August.)

1. On a Case of Achondroplasia. R. CESTAN.
2. Some Remarks Upon Achondroplasia. E. APERT.
3. A Case of Family Rachitis. A. ZIMMERN.
4. Macroductylia and Microductylia. P. BEGOUIN and J. SABBRAZES.
5. Myoclonia of the Type of Bergeron in a Degenerate Hysteric. R. BARNARD.
6. Experimental Researches Upon Fatigue Induced by Stimulation of the Olfactory Sense. CH. FÉRÉ.
7. Cerebral Tumor (Conclusion). E. DUPRÉ and A. DEVAUX.
8. Supplementary Remarks Upon Dwarfs in Art. HENRY MEIGE.

1. *Achondroplasia*.—A paper containing many interesting facts on the subject of dwarfism together with a detailed clinical account of such a case observed in the nervous clinic at the Salpêtrière. The article is illustrated by a number of beautiful photographs and radiographs. Achondroplasia is a variety of dwarfism. A dwarf is an individual very much reduced in stature in comparison with other individuals of the same race, but with a correct proportion between the various portions of his body; in other words he is an homunculus. The question whether dwarfs can procreate their type is an interesting one, which is answered in the negative, according to the present state of our knowledge. The great majority of marriages between dwarves is unfruitful, or, if children happen to be born, they are normal. Dwarves can be divided into two groups: first, those in whom the abnormality is caused by a local trouble of the skeletal system, second, those in whom the abnormality is caused by a general nutritional disturbance. In the first group are contained the rachitic and achondroplastic dwarves. These cases produce normal children. In the second group belong myedematous and hereditary syphilitic dwarves. It can be concluded then that the dwarf of the white race is a pathological product, who cannot transmit his special characteristics, obeying in this respect the law of the evolution of species.

2. *Achondroplasia*.—An account of two achondroplasias, illustrated by photographs and radiographs. These are two dwarves whose trunks are normal in dimensions, but whose extremities are much shorter than the normal. Achondroplasia is then a congenital affection, characterized by a considerable diminution in the length of the long bones of the extremities. The proportion of the head and trunk, formed by the short or flat bones, is very nearly normal. This is a congenital affection for the reason that the same relations exist at birth as in later life. Photographs of fetal achondroplasias are given to illustrate this important fact. From these observations it is an easy matter to determine the difference between achondroplasia and rachitism. In the latter, if the extremities are diminished in length, it is not due to the lack of development of the

long bones, but to the fact that they become curved, softened and knotted. Rachitics can become micromelics, as is found in achondroplasia, but in rachitism the shortness of the extremities is acquired through the malformation of the osseous axis, and not simply through the reduction in length of this axis. In addition, in rachitics, the malformation is not limited to the extremities alone, but is found also in the head, thorax and trunk. The intelligence of achondroplastic dwarves as compared to the rachitic dwarves is greatly in favor of the former. The former are, as a rule, normal, while the latter often show a markedly inferior mental development. In regard to the cause of the deformity in achondroplasia, it is probable that it lies in the insufficiency of the formative material, the place of which is taken by the epyphesial or intradiaphesial cartilages. The localization of the process is confined to the long bones. Shortening takes place without thinning of the bone; for this reason, the term achondroplasia is well selected. It means a defect in the development of the cartilage.

3. *Family Rachitis*.—A study of a family of eight members, five of whom have been attacked by osseous dystrophy. They all show typical rachitic deformity. A short clinical history of each one is given, together with a family photograph.

4. *Macrodactylia and Microdactylia*.—Three observations of malformations of the fingers. The article is illustrated by photographs and radiographs.

5. *Myoclonia*.—A case of hysterical myoclonia in a man. Alcoholic paternal history. Psychical and physical stigmata of degeneration. Absence of ordinary hysterical stigmata. Tremor, astasia-abasia, simple chorea, fibrillary and electric chorea. This group of symptoms followed a psychical shock at the age of seven years. This case is of interest because of the effect of treatment and on account of the pathogenesis of the disease. Tartar emetic was administered according to the method devised by Bergeron, causing the disappearance of the myoclonic symptoms. This agent is in no sense to be regarded as a specific; its use is to reinforce suggestion. The method employed is as follows: The patient was told that he was to be given a remedy which would surely cure the spasmodic movements. The dose at the beginning was 5 cg. After one hour he vomited and the spasms disappeared. The next day he was given 10 cg. and so on for two or three days. After this, suggestion under hypnotism. As a result, the myoclonic spasms disappeared, although the other hysterical symptoms were not affected.

6. *Cerebral Tumor*.—On account of the complexity and variety of the experimental data, this article cannot be abstracted.

SCHWAB (St. Louis).

Archives de Neurologie.

(1902, vol. 13, January, No. 1.)

1. Spasmodic Paraplegia Resembling Section of Cord due to Compression of Dorsal Cord. E. BRISSAUD AND E. FEINDEL.

2. Extension and Its Application in Treatment of Nervous Disease. P. KOUINDJY.

3. Spinal Meningeal Hemorrhage above the Dura. A. COCHEZ.

1. *Spastic Paraplegia*.—The authors report a case with autopsy in support of the theory that a compression of the spinal cord acting like a ligature and transforming the cord tissue into a true cicatrix can cause a spastic paraplegia. They freely admit that a section of the cord when sudden and complete such as is produced by certain

traumatism results in paraplegia with loss of reflexes and total anesthesia which is flaccid and always remains flaccid. But the present case proves that when the section is slow instead of flaccidity, the type of the paralysis may be spastic. The case is as follows: A patient had three attacks of paraplegia due to Pott's disease. The first lasted seven or eight years, was accompanied with pain and was cured. The second attack was accompanied with subjective disturbances of sensibility and was spastic in type. It also was cured. The third attack coming on sometime later was characterized by objective disturbances of sensibility and spastic paraplegia. This attack proved fatal, the symptoms remaining practically the same until death. The autopsy showed that the cord was practically converted into cicatricial tissue at the level of the compression.

2. Extension and its Application in the Treatment of Nervous Diseases.

—Kouindjy reviews in the introduction to this able article the various methods of extension by suspension, and elongation that have been employed in the treatment of ataxia and other nervous diseases, and points out certain difficulties and drawbacks attending these methods that accompanied the very appreciable benefits derived from them, and then proceeds to describe and illustrate by photographs the apparatus of extension by means of an inclined plane which he has used with great success, and with less unpleasant attending condition. His method of procedure is to place the patient on a plank and to apply Sayre's apparatus as it was modified by Motchoutkowski and manufactured by Chazal. The patient's head rests sometimes on the board and sometimes on a little pad, and is placed between the two posterior branches of the chin piece. This is a detail of importance. Mr. Jacob made a hollow in the board to accommodate the patient's head. The occiput in this case is below the surface of the plank, and the strain comes chiefly in the nape of the neck which is contrary to the directions of Motchoutkowski who holds, rightly, that the strain should be born by the chin. When Sayre's apparatus is applied the patient is told to let himself slide as far as possible, so as to stretch himself completely in a horizontal position, and he is drawn down a little to help him to a better position. As soon as the apparatus is adjusted, the plank is raised to an angle of 30°, and allowed to remain for ten minutes when it is raised 5°. In successive treatments, the angle is increased gradually to an angle of 90°, except in cardiac and obese cases where the angle never exceeds 60°. The average treatment lasts fifteen minutes, never more than twenty. The value of the inclined plane is noticeable in that no injurious effects have ever been seen in children and in cardiac patients; the patient is not frightened when the plank is raised to an angle; and if at first he appears timorous he is told to rest his hands on the handles at the sides of the plank. But it is rare that this manoeuvre is resorted to, and when it is, it is but for a moment. This treatment by the inclined plane has been followed at short intervals of one and two days or bi-weekly, for a year and a half without any sign of weakness in the patient, and with marked benefit. And in 3,000 or more suspensions made with the inclined plane, there was in no case any of those troubles produced by suspension by hanging or elongation. The only inconvenience noticed is the pulling on the muscles in the nape of the neck, but this disappears after a few moments' rest. The ease with which the treatment is given permits its use in cases where suspension or hanging are distinctly contraindicated. The author quotes the case of an ataxic cardiac patient

who at the end of a year of this treatment was able to walk alone, and in a year and a half was going about the streets of the town. The article is to be continued.

3. *Spinal Meningeal Hemorrhage Above the Dura*.—Cochez describes an interesting and unique case of a man forty-five years of age, who had been a great traveler and had indulged in alcoholic excesses, taking as much as fifteen to twenty glasses of absinthe a day. Although he was a strong man, he had had a fall, due to his intoxicated condition, and entered the hospital covered with bruises on various parts of his body, and palsy of his lower limbs, trembling and with cerebral torpor. One day he sank down suddenly while walking, and was unable to get back to bed without help. He had incontinence of the urine and feces; also complete paraplegia with hallucinations and cerebral depression, and at the end of thirteen days expired quietly. The autopsy showed a large abundant spinal hemorrhage outside of the dura mater. How can one explain this hemorrhage in such an unusual place, and when did it occur? Cochez asks. We willingly admit, he replies, that the traumatism was the determining cause of the hemorrhage, but that alcoholism and Bright's disease played the rôle of predisposing causes. As to this ictus occurring unexpectedly during his sojourn in the hospital, and being followed by complete paraplegia, was it not due to a new hemorrhage compressing the brain more completely, and by obstructing the free circulation of the cerebrospinal fluid determining the cerebral symptom which progressed slowly until death?

PEARCE BAILEY (New York).

Tidsskrift for Nordisk Retsmedicin og Psykiatri.

(1901, Vol. I, Nos. 1 and 2.)

1. Medico-legal Aspects of Marriage. H. A. TH. DEDICHEN.
2. History of Legal Medicine in Denmark. S. HANSEN.
3. On Some Cases of Sadism. C. GEILL.
4. Identification by Means of Tattooing. C. GEILL.

1. *Medico-legal Aspects of Marriage*.—Upon marriage and its consequences from a medico-legal point of view, and principally from the point of view of medical jurisprudence, taking into special account the discretion of the medical profession and its right to silence. (The résumé will follow in the next number, when the memoir will have appeared entirely.)

2. *Upon the History of Legal Medicine in Denmark*.—The author points out why, before the organisation in 1740 of the Collegium Medicum, the province of medicine in Denmark had attained only a very restricted and primitive development, a matter of some historic interest. Indeed, the legal medical operations were not always performed by physicians of regular standing; perhaps by those who connected themselves more or less with the University, but more often by "Barber surgeons," practitioners who possessed great experience and practical capacity against which the authorized savants could not measure themselves. These latter did not care to risk daily tests and proofs, recognizing their incompetence, but they reserved their forces for the office of medico-legal counsellors to the crown. In support of this, the author cites cases in which the autopsy and examination of a person accused of syphilis had been made from the legal point of view by these barber surgeons.

3. *Cases of Sadism*.—Three legal cases in which young, degenerate or imbecile individuals were guilty of pseudo-sadism.

4. *Identification by Tattooing.*—Tattooing is very significant for the identification of corpses as it often includes the entire name of the individual who possesses the mark, the initials, date or place of birth or some professional emblem. Among 1,000 tattooed individuals the author has found 730 such marks which assisted in identification. Of the professional emblems found (89), the special mark of the baker has most often been found (17), also the blacksmith's (13), and the butcher's (12). Tattooing assists as well in the identification of criminals. Among 16,000 Danish criminal men, 662 (41.38 per cent.), had very distinct marks, while 202 bore indistinct tracings of experiments during youth. It is to be desired that in prison and police stations complete lists should be made out of the tattooings upon criminals, especially young prisoners who have not attained full development and whose measurements, according to M. Bertillon, cannot therefore be depended upon. As many criminals carry tattoo marks on places not covered by clothing, the marks may often serve in cases of violence or law-breaking in the recognition of the guilty ones. Among 1,600 criminals, 267 (16.69 per cent.), had marks very easy to recognize on their hands. Compulsory tattooing of all criminals, such as has recently been proposed in Germany, must be discouraged from humanitarian motives. JELLIFFE.

Annales Medico-Psychologiques.

(1902, Vol. 60, No. 1. January, February.)

1. Psychoses among the Jews. PILCZ.
2. Suicide and Insanity. VIALON.
3. Language of Idiots. L. MAUPATE.
4. Propagation of Tuberculosis through the Stools. D. ANGLADE.
5. Protection of the Fortunes of Patients Confined in Insane Asylums. S. GARNIER.

1. *Psychoses among the Jews.*—This subject is discussed by the author, under two headings: (1) Is there a predisposition to mental diseases among the Jews? (2) If so, to what special psychoses are they subject? The former question is answered in the affirmative; the answer to the latter is given in the following conclusions: (1) Psychoses due to alcoholism are rare among the Jews; (2) there is no preponderance of psychoses due to accessory causes, such as intoxicants, of exogenous or endogenous origin, changes in the vessels, etc.; (3) precocious dementia, and dementia following an acute psychosis are frequent among the Jews; (4) general paresis occurs more frequently in this race than in others; (5) the Jew is predisposed to psychoses from hereditary degeneracy.

2. *Suicide and Insanity.*—This study continues work done in last month's issue and cites further observations as follows: Menstruation influences suicidal tendencies either by exaggerating a mental condition already existing or producing at the menstrual period an impulse to suicide; amenorrhea and dysmenorrhea have a like effect in this respect. Any affection of the genital organs as well as the periods of puberty, the menopause and pregnancy may excite the disposition to self-destruction. Religious excitement has been, from the earliest history of Christianity, a potent factor in the voluntary sacrifice of life, as shown by the religious fanatic who, through public confession of faith, subjected himself to death by torture, hoping thus to gain the kingdom of heaven. Modern instances are seen in the conditions of megalomania, dementia, paresis, degeneracy, etc., in which the suicidal impulse is generally due to hallucinations, such as

the conception of celestial voices commanding self-destruction, etc. Religious lipomania is among the most frequent causes of suicide, in which the patient is impelled to commission of the crime through a sense of unworthiness to live. Homicidal and suicidal tendencies are often associated, as instanced by religious maniacs who murder parents or children to release them from a life of sin and procure for them celestial beatitude, subsequently committing suicide themselves.

3. *Language of Idiots.* The continuation of investigations described in last month's number is here given. In a limited number of idiots speech is altogether monosyllabic; in most cases there is a tendency to expression in words of two syllables, more complex terms being reduced to this form. The consonants are more difficult of pronunciation than the vowels, hence they are frequently suppressed. Inability to pronounce certain letters is common; this condition is known as mogilalia. Difficulties in pronunciation of r, l, g, or s, are termed respectively rhotacismus, lamadismus, gammacismus and sigmacismus; if these sounds are replaced by others, the terms pararhotacismus, paralamdacismus, etc., are used. Of these varieties of mogilalia, the most common are sigmacismus, and parsigmacismus. These peculiarities of speech may be so multiplied as to render the idiot's language incomprehensible; to such language the term hottentottismus has been given. Comprehension precedes speech in the idiot as in the infant. Eight in sixty idiots comprehend absolutely nothing; between this condition and comprehension of long sentences and elementary reasoning, there exist varying degrees of intelligence. It is probable that the idiot, like the infant, first understands sentences, before individual words composing them are recognized; gestures and intonations assisting comprehension.

4. *Propagation of Tuberculosis through the Stools.*—This subject is thus summarized: (1) Tuberculous infection of the intestines is the rule in pulmonary phthisis; (2) it may be primary or secondary; (3) chronic diarrhea of the insane is almost always a symptom of tuberculous enteritis; (4) bacterioscopic study of this enteritis shows that it is due to an active bacterial process, the bacilli being diffused through the intestinal contents; (5) tuberculosis is propagated through the stools of tuberculous patients, and such stools are an especial menace in insane asylums; (6) all tuberculous stools should be disinfected; 30 seconds contact with carbolic 50-1000 will destroy the bacillus; (7) prophylactic measures against propagation of tuberculosis consist in isolation of tuberculous patients, and care of the expectoration and stools.

5. *Protection of the Fortunes of Patients Confined in Insane Asylums.*—This article is a continuation of a lengthy exposition concerning protective measures in the financial interests of patients confined in insane asylums; what such measures are, and what they should be.

R. L. FIELDING (New York).

Neurologisches Centralblatt.

(1902, Vol. 21, No. 2, January 16.)

1. Contribution to Periodical Insanity. Ennen.
2. The Topography of Cortical Degeneration in General Paralysis of the Insane, and Its Relation to the Association Centers of Flechsig. KARL SCHAFER.

1. *Periodical Insanity.*—Three cases of periodical insanity are here reported with clinical details, without any attempt at classification.

2. *Cortical Degeneration in General Paresis.*—Schaffer gives a very

careful study of the brains from two cases of general paralysis and one case of tabo-paralyse (tabes with general paralysis). Sections through the entire brain were stained by the Weigert-Wolters method. The degeneration was very intense in those areas corresponding to Flechsig's association centers—*i.e.*, the frontal, parietal, post-central, insular, the second and third temporal gyri and the gyrus fornicatus. He concludes that his findings support Flechsig's theories, and that the cortical degeneration of paresis is not an irregular, diffuse process, but a regular, localized, elective or selective affection of the cortex.

D. J. MCCARTHY (Philadelphia).

MISCELLANY.

DIAGNOSIS OF TUBERCULOUS MENINGITIS. R. Breuer (Wiener klin. Rund., October 9, 1901).

The author briefly reviews the methods. A result after injecting the aspired fluid into guinea-pigs takes too long to be of value. It has been pointed out that cerebrospinal fluid forms an excellent culture medium for the tubercle bacillus, but to set the fluid aside in the incubator and await a multiplication of the germs would also demand patience. The agglutination test is of no value and the finding of a preponderance of mononuclear leucocytes is not always conclusive for tuberculosis. A direct examination of the stained sediment of the fluid is generally negative, but when done properly has proved positive in the seventeen cases examined by the author. The fluid must be collected in test-tubes each containing 4-5 c.c. and these set aside, care being taken not to shake them. After 3-6 hours a very fine coagulum, containing the cellular elements with the bacteria, forms, while the fluid itself will be absolutely clear. An examination of the coagulum will almost always be crowned with success. In a second article in the same number, J. Nonath discusses the sero-diagnosis of tuberculous meningitis. Five to fifteen drops of a specially-prepared, homogenous culture were mixed with one drop of cerebrospinal fluid. The results were noted after 8-24 hours. Of four cases in adults there was a negative reaction in one, a partial one with a dilution 1 to 5 twice, and a complete one with a dilution 1 to 5 once. In two cases in children the reaction turned out negative. The clinical value of the method thus is slight.

JELLIFFE.

DIFFUSE DISEASE OF THE BRAIN AND CORD, SIMILAR TO MULTIPLE SCLEROSIS, WITH AN ESPECIAL ETIOLOGY. R. v. Jaksch (Wien. klin. Rundschau, No. 41, p. 729, 1901).

In a study by Lotsch, made upon the cases of multiple sclerosis in the service of von Jaksch, the etiological factors of most significance were found to be previous infectious diseases and trauma. The author of this article adds three more cases which are especially notable as all of them showed the same progress, and appeared at the same time, and had the same etiological factors. Although these three cases are to be classed as multiple sclerosis, yet they differ from the typical ones in individual symptoms. Nystagmus and intention tremor were either not present at all or were found only temporarily. Likewise pupillary changes, which are seldom found absent in the course of a typical multiple sclerosis, were not present at all. In cases I and II an inability to walk backwards was one of the most striking symptoms, and in the latter case the Romberg symptom was present for a short time. The etiology of all three cases is of special interest. The patients worked in the same factory and were employed in performing the same kind of work. They were engaged in this work for a period of six, nine and eighteen months, respec-

tively. It consisted in drying regenerated hyperoxide of magnesium mud. The process is as follows: the mud through pressure is freed from calcium chloride, washed with water, and dried in the form of bricks, which hold 60 per cent. water, 2 per cent. calcium chloride, and rectified superoxide of magnesium. These are then placed upon large plates which are heated to 100°. During this process, the workers have to endure great variations of temperature, and it is to this, more than to the presence of the magnesium in the atmosphere, that the author attributes the causation of the disease. In other words, cold is a traumatic factor in the etiology of these cases.

SCHWAB.

MULTIPLE HEMORRHAGES IN GENERAL PARESIS. Frey (*Allgemeine Zeitschrift für Psychiatrie*, 1901, lviii, 4, S. 632).

The author gives the clinical history, and the autopsy revelations, in the case of a male paretic of forty-two years, who died after a seizure, under symptoms of exhaustion, having passed blood in his urine and stools, and having vomited it. There were hemorrhages in the skin, the mucous and serous membranes, the kidneys, the heart muscle and the brain substance. He declares himself an adherent of the opinion that multiple hemorrhages in general paresis, are probably due to trophic changes in the vessel walls, resulting from the disease of the brain cortex.

ALLEN.

ZUR KLINIK DER ANGIOSCLEROTISCHEN PAROXYSMATEN MYASTHENIE ("Claudication intermittente," Charcot's) UND DER SOG. SPONTANEN GANGRÄN (Angiosclerotic Paroxysmal Myasthenia and So-called Spontaneous Gangrene). H. Higier (*Deutsche Zeitschrift für Nervenheilkunde*, vol. xix, 5 and 6, s. 438).

After a critical review of the subject based upon the literature and what he has himself observed in twenty-three cases of which he has notes, the author feels justified in drawing the following conclusions:

- (1) The most suitable name for the disease is "Angiosclerotic paroxysmal Myasthenia."
- (2) The disease in general, uncommon, is relatively frequent in Russia, Poland and the Lithuanian Provinces.
- (3) The great majority of those affected are Hebrews.
- (4) In females the disease is eruptional.
- (5) It affects individuals of young or middle age, from the twentieth to the fiftieth year.
- (6) Neuropathic disposition and congenital weakness of the peripheral circulatory apparatus seems to play the chief rôle in its production.
- (7) Overuse of the legs, wetting, thermal influences, alcoholism and nicotinism hasten the outbreak of the disease, syphilis and gout play no, and diabetes only a very limited part in its etiology.
- (8) The peculiar angiosclerosis localizes itself most commonly in the legs and not infrequently symmetrically.
- (9) The chief symptom, pain, presents itself in three forms: (a) pain on walking, along with paroxysmal myasthenia or intermittent limping; (b) permanent pain appearing during rest as painful paresthesia, characteristic of the advanced stage of the disease and exceptionally dominating the picture for years in the absence of myasthenia; (c) pain accompanying gangrene.
- (10) In the cases of diffuse angiosclerosis of the upper and lower extremities, a characteristic symptom-complex on the part of the general condition, and of the psychical sphere, occasionally follows

the occurrence of ulceration and gangrene—improperly called spontaneous gangrene.

(11) The disease sometimes runs on for years under the appearance of a vasomotor or sensory neurosis, without recognizable vessel change.

(12) Together with organic narrowing of vessels, functional vasomotor disturbances play an important part in favoring gangrene.

(13) Most obscure from the point of view of differential diagnosis are those cases in which along with vessel obliteration and myasthenia, typical symptoms of Raynaud's disease, or erythromelalgia, are present.

(14) There are probably two chief groups of this peculiar endarteritis: (a) the more common with primary location of the disease process in the vessels; (b) the less common with preceding nerve degeneration (so-called neurotic angiosclerosis).

(15) A rational hygienic and dietetic regime (especially mental and physical rest) may prevent the occurrence of the gangrene, fatal occasionally and at best producing deformities seriously interfering with the usefulness of the patient.

(16) In doubtful cases with intense pain and tendency to ulceration, the less radical measures of nerve stretching, tension or restriction used by Chipault and his school in perforating ulcers, seem worth a trial.

ALLEN.

AN INTRODUCTION TO THE PSYCHOLOGICAL STUDY OF BACKWARD CHILDREN. William B. Noyes (N. Y. Medical Journal, Vol. lxxiii, 1901, No. 25, June 22).

The author classifies mentally defective children as follows: (1) Those in whom the faculty of perception is deficient, and this includes all those who have been born defective in their special senses, the blind, the deaf, and the dumb, who can only develop mentally by some vicarious education of other faculties. In the extreme types we have the so-called idiots by deprivation, who are idiots simply because they lack certain special senses; (2) those children who, in spite of possessing all special senses and power of perception, lack the power of attention, without which the most painstaking instruction or frequently-repeated suggestion is without result. The third class is one which is characterized, not by defect of special senses or the power of attention, but by defect or disease of the will. Of this, the case reported is in some respects an example; (3) disease of the will may be classified as follows: (a) Impairment of the will by defect of impulse, varying from sluggishness or irresolution, not uncommon among children, to extreme types of what is called abulia, or "idiocy of the will," which is a complete lack of will power and decidedly rarer; (b) the will may be impaired through a morbid fear or a fixed idea: among children this is usually regarded by parents as a silly notion of an imaginative child and not anything serious, and in reality it seldom persists long in any one definite form. In adult life these phobias, or minor fixed ideas, are common enough; (c) the will may be impaired through some excessive impulse which may be instantaneous in its onset or something more gradual; (d) there may be impairment of the will due to a lack of power of attention. This may be congenital, as in the case reported, or acquired, as seen in various neuroses and psychoses; (e) the will may be limited or practically destroyed by being controlled by the caprices of hysteria; (f) the will

may be in abeyance in conditions allied to hypnotism which are seen in childhood, chiefly in connection with morbid religious revivals and similar mental excitements; (4) while attention and will are in a way associated with motor functions, the higher, or cognitive, powers of the mind seem more related to the sensory functions. A child may be normal in perception, attention, and will, and yet be decidedly deficient in reasoning faculties; (5) there are cases where the child has normal senses, power of attention, will power, and reason, but fails in memory, or the power to recall what may have been acquired in the near or remote past.

SMITH.

UEBER DEN NORMALEN GROSSZEHENREFLEX BEI KINDERN (On the Normal Great Toe Reflex in Children). Fritz Passini (Wiener klinische Wochenschrift, No. 41, 1900).

The "toe phenomenon" first described by Babinski two years ago has attracted much attention and has been verified in part by well-known neurologists.

Passini found it present in older children with cerebral palsies, congenital hydrocephalus with spastic paresis of the lower extremities and in spinal diseases such as compression paralysis from caries of the vertebra. In tubercular meningitis he found it had a prognostic value as in a number of cases the flexion turned into extension one or two days before death. Babinski called attention to the fact that there was normally an extension of the toes on plantar irritation in infants which changed to the normal flexion type of the adult when the child began to walk. The author made a number of investigations and found that the flexion type of the great toe reflex normally appears in the fourth quarter of the first year. The use of the feet in walking does not produce the reflex, but is dependent upon the development of the pyramidal tracts. Pathological changes in the pyramidal tract in older children and adults cause a return to the infantile form of the plantar reflex.

JELLIFFE.

UEBER DEN KLINISCHEN VERLAUF UND DIE PATHOLOGISCH-ANATOMISCHEN VERÄNDERUNGEN EINES SCHWEREN DURCH HEMIPLEGIE BULBÄRE UND PSYCHISCHE STÖRUNGEN AUSGEZEICHNETEN FALLES VON BASEDOWSCHER KRANKHEIT (Concerning the Clinical Course and the Pathologico-Anatomical Changes in a Severe and Extraordinary Case of Exophthalmic Goiter, Characterized by Hemiplegia, and Bulbar and Mental Disturbances). Dinkler (Archiv für Psychiatrie und Nervenkrankheiten, xxxiii, 2, 1900).

The number and severity of the nervous symptoms in exophthalmic goiter suggest an anatomical basis for the manifestations on the part of the nervous system, but no constant lesions have yet been described, the various nervous changes reported from time to time having been more in the light of complications or incidents. The case which is made the subject of this paper presented symptoms attributable to changes in the liver, kidneys, heart, thyroid gland, thymus, nervous system and body musculature. Besides the struma, cardiac palpitation and exophthalmos, the following symptoms were worthy of note: strong arterial pulsation, roaring and vascular murmurs over the thyroid, systolic mitral murmur with dilation of both sides of the heart, Stellwag's, Graefe's and Moebius' signs, tremors of the hands, diminution of the electrical resistance of the skin, tendency to cry and to laugh, hasty speech, marked acceleration of all voluntary movements, hyperidrosis, falling of the hair, diarrhea and

vomiting. The patient revealed an entire change of character, suffered from hallucinations of all senses, became egoistic, disorderly, wasteful, and untidy. These mental changes were followed by symptoms on the part of the motor system, beginning with light twitching of the left side, both in limbs and face, and similar to the movements of chorea. After a short time these movements became stronger and coincidentally there was marked weakness of the muscles, resulting in pronounced hemiparesis with diminution of the irritative movements. The hemiparesis was progressive, resulting in flaccid paralysis of limbs, face and tongue, and was followed by bulbar symptoms. The latter were indicated by loss of facial expression, nasal speech, and regurgitation of food, of variable constancy and suggesting in their character and course *myasthenia pseudo-paralytica*.

The author presents a careful and exhaustive description of the histological examination. The cerebral cortex of the central convolutions of both sides was markedly diseased. The ganglionic cells in numerous regions were changed, and in the right motor region the degenerative foci were so numerous and pronounced that in the stained specimen they were visible to the naked eye. There was also plainly marked descending degeneration through the bulb and into the cord, with involvement of the nuclei of the cranial nerves, especially of the facial and hypoglossus.

The author compares the symptoms with the pathological conditions and believes that the completed case is in accord with the assumption by Moebius of an intoxication as the cause of the disease. He believes that with careful means of examination for the nervous system changes may be found in the lighter cases, and he prefers Nissl's method over that of Marchi. He also discusses the relations of the thymus to exophthalmic goiter, and argues that the functions of the thymus and thyroid and accessory glands are analogous, and that the one may be affected in one case and the other in another, or all may be involved in the same case. The difficulty of determining this point and the inaccessibility of thymus are against surgical procedures, and explain the failures of surgical operations undertaken for the cure of the disease. As long as it is impossible to determine the size of thymus or the existence of accessory thyroid bodies in the individual case, so long will the results of operative treatment be simply a matter of chance. H.

KLINISCHE BEITRÄGE ZUR KATATONIE (Clinical Contributions to Katatonia). Schüle (Allg. Zeitschrift für Psychiatrie, 1901, lviii. s. 221).

In a critical digest of the subject the well known Hlenau alienist considers at some length the symptoms which have been brought together to form the clinical group katatonia, discusses their probable method of production, and their occurrence in connection with other forms of mental disease as well as a distinct clinical type, and attempts some estimate as to their relative importance in diagnosis and prognosis. He concludes that there exist: (1) A group of cases in which the katatonic symptom combination occurs idiopathically and persists from beginning to end; true katatonia, and acute primary dementia, with negativism and characteristic motor and muscular symptoms; (2) a group of cases in which katatonic symptoms, accompany, break in upon, or conclude other psychical disturbances, generally certain confusional or paranoid processes of acute, sub-acute, or chronic course, whose previous history would cause no sus-

picion that such symptoms would appear. In such cases the katatonic symptoms may after greater or less duration, entirely disappear, or may persist and modify the further course of the disease. That a certain number of cases of katatonia recover is admitted. The author after discussing the individual symptoms concludes that it is impossible to draw from the presence or absence of any of them, positive prognostic conclusions, though some are decidedly more favorable than others. More promising he regards the study of the psychopathological fundamental signs and an effort to learn their relation to the profundity of the cerebral affection. He urges the necessity for continued study of the results of psychophysiological experimentation and their comparison with psychopathological manifestations, and expresses the hope that by so doing we may some day gain a standard of comparison, for mental symptoms, just as for instance we now estimate the character and extent of disease of the lungs by comparing the results of physical examination of the normal and of the affected organ, a sort of "psychical auscultation," as he expresses it.

ALLEN.

PSYCHOSES OF THE MENOPAUSE. J. Chapin (Philadelphia Med. Journ., Aug. 25, 1900).

The author endeavors to show that the danger of insanity beginning during the menopause has been exaggerated. Out of 8,320 women admitted into various institutions, only 188 were specified as becoming insane at the menopause, nor was it clear how many out of the 188 went mad through the special changes in the genital tract at that period of life. The statistics of the Pennsylvania Hospital show that between the ages of forty-five and fifty-five, representing the usual range of the menopause 975 men and only 876 women were admitted into that institution. S. Weir Mitchell, in his analysis of 3,000 cases of melancholia, shows that the exact percentage of cases between the ages of forty-five and fifty was 20.2 in men and 21.4 in women, the difference being very, very slight, and once more not due, on any distinct evidence, to the local changes of the menopause. The dread or risk of insanity at the approach of the menopause in a woman ordinarily of sound mental and psychical health and inheritance has no better foundation than a popular delusion based on borrowed fears.

JELLIFFE.

Book Reviews.

THE DIAGNOSIS OF NERVOUS AND MENTAL DISEASES. By HOWELL T. P. PERSHING, M.S., M.D., Professor of Nervous and Mental Diseases in the University of Denver; Neurologist to St. Luke's Hospital; Consultant in Nervous and Mental Diseases to the Arapahoe County Hospital; Member of the American Neurological Association. P. Blakiston's Son & Co., Philadelphia. \$1.25.

This is a small volume constructed on practically an entirely new principle in medical diagnosis and is deserving of much attention, especially from the general practitioner. The author says that he has applied the principles of systematic science, and has devised a series of keys whereby a given lesion may be definitely located. From what we know in the systematic study of botany and of zoology such keys are not only means to an end, but are distinctly beneficial in impressing the mind of the student with broad, general lines of differentiation. Much the same purpose will be subserved by the present volume, and we welcome it as a departure from the older modes of presentation of the subject. Such a work should, we believe, be in every doctor's library, and when its reasonable price is taken into consideration there is no good reason why it should not be.

JELLIFFE.

DIAGNOSTIC DES MALADIES DE L'ENCÉPHALE. Par le Docteur Grasset. Les Actualités Médicales. J. B. Baillière et fils., Paris.

This volume of this short, serviceable and practical series of manuals is the last of three of the same author, two of which have already been noted in these columns.

In his "Clinical Anatomy of the Nervous System" and the "Diagnosis of the Diseases of the Spinal Cord," Dr. Grasset outlined his general plan of procedure. For the diseases of the brain as for those of the cord, similar modes of description have been adopted.

He outlines in some detail the main syndromes of encephalic lesions, with the paralyzes, convulsions, contractures, and anesthetics. Following this is a chapter on diagnosis of organic hemiplegia, another on central lesions of the visual apparatus; and others on the control of orientation and equilibration, the functions of language and its abnormalities, aphasia, paraphasia, anarthria, dysarthria, etc.

Taken all in all the volume is a concise and handy book for reference and for suggestive ideas.

JELLIFFE.

EPILEPSY AND OTHER CHRONIC CONVULSIVE DISEASES. THEIR CAUSES, SYMPTOMS AND TREATMENT. By Sir WILLIAM GOWERS, M.D., F.R., C.P., F.R.S. Second Edition. P. Blakiston's Son & Co., Philadelphia.

In all particulars, save that of its general character, this book is a new one. The ease and grace shown in the descriptive passages in the first edition, are here the same, but there is a great

increase in the wealth of illustration, and the generalizations drawn are from critical studies of 3,000 cases, whereas, 1,450 served as the foundation of the former edition.

Not only is the work richer for this doubled number of cases, but it profits by the author's maturer opinions concerning a very protean disease, thus giving the book more of the character of a completed study. It thus ranks with the larger classics of Binswanger and Féré.

It is a matter of some regret that a more thorough and modern exposition of the *pros* and *cons* of surgical interference in epilepsy is not given by the author, and one would expect to find a discussion on the open air or colony plan of treatment, since such a procedure has enjoyed so widespread a popularity not only in America, but in Europe as well.

Notwithstanding the somewhat incomplete chapters on treatment, the work remains the best in the English language.

SMITH.

JAHRESBERICHT ÜBER DIE LEISTUNGEN UND FORTSCHRITTE AUF DEM GEBIETE DER NEUROLOGIE UND PSYCHIATRIE. Redigirt von Professor Dr. E. MENDEL, in Berlin, und Privat-docent Dr. L. JACOBSON, in Berlin. IV. Jahrgang, Bericht über das Jahr, 1900. S. Karger, Berlin.

We have had occasion in former years to commend most highly this year book of neurology and psychiatry. It is so vastly superior to anything of its kind, published in any language, that no working neurologist who makes any claim of keeping posted on the work of his specialty, can afford to be without it.

The present year book varies in no important detail from that of its predecessors. It is more complete, however, and we venture to assert that nothing of importance has been omitted. As an example of the thoroughness with which the work has been done it may be of interest to note that over one hundred papers on tabes are abstracted.

The therapeutic abstracts are to be especially commended. They cover the entire field and are extensive enough to be of service without the need of a comparison with the original article.

The authors and publishers alike are to be most heartily congratulated on this present year-book. It should have a great success.

JELLIFFE.

A TEXT-BOOK OF MEDICINE FOR STUDENTS AND PRACTITIONERS. By ADOLPH STRÜMPFELL. Third American Edition from the Thirteenth German Edition. Translated and edited by Drs. H. F. VICKERY, P. C. KNAPP, FREDERICK C. SHATTUCK. D. Appleton and Company, New York.

No text-book of modern years has had the vogue of Strümpfell, and this is because of no accident, but of its sterling merits. Translated as it has been into at least nine different languages, it has served its useful purpose in diffusing knowledge of general medicine to all parts of the world, and has raised the intellectual level of the careful reader no matter where he may have been born. Such books are of great benefit to the profession.

In the preface to the thirteenth German edition the author outlines in a very clear, graceful and philosophic manner his desires in the production of this new edition. It is rare to find so good an in-

roduction. "My purpose was not to collect all of the facts of pathology, which have been discovered up to date, nor all the methods of treatment which may have been recommended, wisely or unwisely, nor all the theories or views which have been propounded. My wish was to give a complete presentation of the essentials of our present knowledge and views with regard to the various diseases, from a scientific and individual standpoint; and I desired particularly to impart to the reader an insight into the origin and relation of the various morbid phenomena." Perhaps no one else has done this very desirable thing in so excellent a manner.

To the neurologist the work is particularly valuable not only because of the high reputation in that specialty which the author possesses, but also of the able collaboration of a neurologist of note in this country. For a short presentation of the subject of nervous diseases it would be hard to find its equal.

There is much to praise and little to criticise in this new edition, and the work still remains an enduring monument to the author's great grasp of the essentials in medical practice. JELLIFFE.

LEHRBUCH DER NERVENKRANKHEITEN FÜR AERZTE UND STUDIRENDE.
Von Prof. Dr. H. OPPENHEIM. Dritte vermehrte und verbesserte Auflage. S. Karger, Berlin.

New editions of text-books appear frequently in Germany, and usually the latest edition is a great improvement on those that have preceded it, and contains the pith of the recent literature. Oppenheim's "Lehrbuch" has now reached a third edition, and the second edition has been translated into the English language.

This third German edition has been much enlarged by additions both to the text and to the illustrations, the latter having been increased from 287 to 369 in number. It contains references to the literature on neurology that has appeared within the three years that have elapsed since the publication of the second German edition.

Oppenheim's text-book is so well known, and enjoys such an enviable reputation, that it needs no introduction to the medical public; and all that is necessary is to call attention to the fact that this third edition is now on the market. It is truly a remarkable production; in its condensation, its wealth of original observations, its recognition of valuable recent literature of all countries, it has no superior. It is one of those books the neurologist must have if he desires to keep informed on his special subject. We might select here and there a chapter for special notice, but this might fail to accomplish the desired object, because the book is of uniform value throughout, not only to the specialist in nervous diseases, but also to the general practitioner and the undergraduate student. As an example of the thoroughness of the work we may, however, refer to the chapter on hemiplegia. In this are references to Mirallié's, Féré's and Saenger's papers on the implication of the upper branch of the facial nerve in hemiplegia—a condition which has been known to exist before these papers were written—reference to the views of Wernicke and Mann on the greater implication of certain muscles in paralysis of cerebral origin; to the views of Bonhoeffer on the location of a lesion in the superior cerebellar peduncles as the cause of athetosis, etc.

Oppenheim has published in this book many original observations that are not found elsewhere in his writings. Although it con-

tains 1,220 pages we could not desire the omission of any part. If it finds the reception it merits, it will have a large circulation.

SPILLER.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D. Assisted by H. R. M. LANDIS, M.D. Volume III, September, 1901. Diseases of the Thorax and Its Viscera, Including the Heart, Lungs and Bloodvessels—Dermatology and Syphilis—Diseases of the Nervous System—Obstetrics. Lea Brothers & Co., Philadelphia and New York.

This volume of "Progressive Medicine" contains some very interestingly practical material for wintry weather. Some of the newer remedies for bronchial and pulmonary affections are fully discussed. The use of apomorphine given hypodermically in doses of about 1-30th of a grain as a sedative expectorant with distinct hypnotic action, shows an old friend in a new rôle. Myrtol, a yellowish, oily, pungent fluid, has been most successfully employed by Solomon Solis Cohen in the profuse catarrhs of bronchorrhea, bronchiectasis, fibroid phthisis, bronchitic asthma, etc., in doses of from five to fifteen minims, in emulsion or in sealed capsules. Thiocol, the potassium salt of guaiacol sulphonic acid is also suggested as a useful remedy in bronchial cases.

The postural treatment of bronchial affections, especially in accordance with Quincke's ideas and methods is becoming more and more popular. The patient is placed on the face with the shoulders below the level of the hips, and gravity aids in the expulsion of secretion. Naturally this is not suited to acute cases.

The chapters on diseases of the brain and of the nervous system, by Dr. Spiller, make an especially complete and suggestive résumé of these subjects. Dr. Spiller's work is so thorough in this matter as to leave nothing to be desired.

In the chapters on obstetrics there is an especially full discussion of recent advances in medicine with regard to the etiology and treatment of eclampsia. Taken all in all this volume of "Progressive Medicine" represents a most informing review in brief of the most practical points in recent medical literature. J. J. WALSH (New York).

News and Notes.

PROF. NAGEL has been appointed to the position of Prof. A. König at Freiburg.

DR. E. STORCH, First Assistant in the Psychiatric Clinic in Breslau, has been appointed as privat-docent in Psychiatry.

DR. H. A. TH. DEDICHEN, of Christiania, has founded a new bi-monthly journal of Neurology and Psychiatry. It is entitled *Tidskrift for Nordisk Retsmedicin og Psykiatri*. Full analysis of its contents will appear in the JOURNAL OF NERVOUS AND MENTAL DISEASE.

PROF. DR. KIRCHOFF, Privat-docent at the University at Kiel, has resigned this teaching position.

THE PSYCHIATRIC ASSOCIATION, of Berlin, has recently drawn up a scheme of reform for the treatment of inebriates. It declares that special institutions are necessary for the isolation of victims of the drink habit. These may be open like general hospitals, or closed after the manner of lunatic asylums. Only institutions adopting the principle of total abstinence should be permitted. The admission of inebriates into institutions may be voluntary at the request of the party concerned, or compulsory under such safeguards as are required in the case of admission to lunatic asylums. The necessary provisions should be laid down by the local authorities in conformity with existing municipal regulations. At the head of these special institutions should be physicians possessing special knowledge of mental and nervous diseases.

A NEW psychiatric clinic has been founded at the University of Groningen.

THE MEDICAL STAFF of the National Hospital for the Paralysed and Epileptic, have finally gained the victory in their contest with the managing Board. An entirely new Board of Management has been chosen; more in sympathy with the needs of the Institution.

THE ANNUAL MEETING of the Neurological Society, of London, was held February 6. Dr. H. W. Page delivered the address on *Concussion of the Brain in Some of its Aspects*.

THE PSYCHIATRISCHE WOCHENSCHRIFT will change its name in April, 1902, to the *Psychiatrisch-Neurologische Wochenschrift*, because of the many requests of neurologists to widen the scope of the journal. We wish it continued success under its new name.

DR. FLAVIUS PACKER, formerly of the Matteawan State Hospital, and recently appointed resident physician in charge of the pavilion for the insane at Bellevue, began his new duties February 15, the Board of Estimate and Apportionment approving his appointment and salary at its meeting.

Dr. Packer's first appointment was at the Long Island State Hospital, and he went from there to Matteawan when that hospital for the criminal insane was first established. He is a specialist of practical experience, and his services were secured by the new manage-

ment with the idea that such a person should be directly in charge of this department of Bellevue. Dr. Packer's assistant will be Dr. Gregory, from the Long Island State Hospital, whose transfer has been agreed upon by the State Civil Service Commission.

DR. ADOLF MEYER, the new head of the Pathological Institute of the New York State Hospital, has reappointed Dr. P. H. Levine as head of the chemical department, and Dr. Brooks as associate in bacteriology. Both were connected with the institute under Dr. Ira Van Gieson, whom Dr. Meyer succeeds. Further appointments, it is announced, will be made as soon as the Civil Service Commission furnishes a list of eligible candidates. Plans for the reconstruction of the Verplank building of the West Manhattan Hospital, on Ward's Island, have already been accepted, and the contracts are being advertised. The Verplank building was originally erected by the Emigrant Department for hospital purposes, and when it was turned over for State service it retained its old name. It is now a three-story building, occupied by hospital wards. The larger part of one floor was, until recently, used as a dining room, but only a few days ago was deserted for the new one just completed. This large room will be rebuilt into several smaller ones, giving plenty of space for a pathological-anatomical laboratory, a chemical laboratory, and rooms for special service.

A DISASTROUS FIRE occurred February 18, destroying Dr. J. H. Kellogg's entire sanitarium at Battle Creek, Michigan. There was no loss of life. The buildings are to be rebuilt immediately.

CIVIL SERVICE EXAMINATIONS for positions in the reorganized Pathological Institute, will be held in New York City, March 15, 1902. The following places are announced: Associate in Clinical Psychiatry (\$1,200); Associate in Chemistry (\$1,800); and Chief Associate in Neuro-Pathology (\$1,800).

THE ROYAL INSTITUTE OF SCIENCE AND LETTERS, of Lombardy, announces the following subjects for theses to be presented in competition for the Cagnola and Fossati prizes for 1902: Cagnola prize, study of the hypophysis cerebri based upon original research; its comparative and embryological anatomy; physiological significance; facts and hypotheses concerning its rôle in pathological processes. Fossati prize, localization, through research and experiment of some cerebral center; psychic, sensorial or motor.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION. The fifty-eighth annual meeting of the American Medico-Psychological Association will be held in Montreal, the third Tuesday, Wednesday, Thursday and Friday in June, (17th, 18th, 19th and 20th) 1902. The meeting follows that of the American Medical Association at Saratoga, which occurs in the second week in June. The matter of transportation has been placed in the hands of the Committee of the latter Association and it is hoped to obtain special railroad rates for both meetings. The headquarters of the Association will be the commodious and comfortable Windsor Hotel, delightful in all its appointments and especially well adapted for convention purposes. Special rates have been secured for members and their friends. The Committee, under the chairmanship of Dr. Burgess, has taken up the matter of arrangements for the meeting with much enthusiasm, and with the large attendance expected, a profitable meeting from every point of view is assured. The annual address will be delivered by Dr. Wyatt Johnston, Lecturer on Medical Jurisprudence,

McGill University Law Faculty, Assistant Professor of Hygiene, the Medical Faculty, Pathologist to Montreal General Hospital, etc., etc. Subject—"The Medico-Legal Appreciation of Trauma in Its Relation to Abnormal Mental Conditions."

Papers have been promised as follows: Dr. Henry M. Hurd, Baltimore, Md., Folklore of Insanity; Dr. E. G. Carpenter, Columbus, Ohio, Insanity and Degeneracy; Dr. J. H. McBride, Pasadena, Cal., Boarding out for the Chronic Insane; Jas. M. Buckley, D.D., LL.D., Morristown, N. J., The Possible Influence of Rational Conversation on the Insane; Dr. A. B. Richardson, Washington, D.C., Women Nurses in Hospitals for the Insane; Dr. George Villeneuve, Longue Pointe, Que., Conjugal Jealousy as a Cause and Excuse for Crime from a Medico-Legal Standpoint; Dr. Jas. Russell, Hamilton, Ont., The Psychology of Anarchism; Dr. William Rush Dunton, Towson, Md., Dementia Præcox; Dr. E. D. Bondurant, Mobile, Ala., The Early Diagnosis of General Paresis and the Possible Curability of the Disease in its Initial Stages.

Papers of which the titles are not yet announced are promised by Dr. A. Vallee, Quebec; Dr. Daniel Clark, Toronto; Dr. Jas. V. Anglin, Montreal; Dr. Geo. L. Sinclair, Halifax, N. S.; Dr. C. R. Woodson, St. Joseph, Mo.; Dr. W. H. Hancker, Farnhurst, Del.; Dr. R. M. Bucke, London, Ont.; Dr. M. E. Wittee, Clarinda, Iowa; Dr. C. G. Hill, Baltimore, Md.; Dr. W. F. Drewry, Petersburg, Va.; Dr. J. W. Babcock, Columbia, S. C.; Dr. Edward Cowles, Waverly, Mass.; Dr. J. A. Houston, Northampton, Mass.; Dr. Owen Copp, Boston, Mass.

The Secretary will be much indebted for promises of additional papers and will esteem it a favor if those willing to read papers will be kind enough to send titles at the earliest practicable date.

C. B. Burr, Secretary.

DR. JACOPO FINZI, one of the collaborators of the *Revista di patologia nervosa e mentale*, of Florence, has just died of typhoid at the age of twenty-nine.

THE AMERICAN NEUROLOGICAL SOCIETY will hold its Twenty-eighth Annual Meeting Thursday, Friday and Saturday, June 5, 6, and 7, at New York in the New York Academy of Medicine. Members are requested to send in the names and abstracts of their papers six weeks in advance of the meeting. The annual dinner will be held Friday evening, June 6.

PROF. KRAFFT-EBING is to resign the Chair of Psychiatry in Vienna, in favor of Professor W. V. Jauregg.

DR. PIERRE JANET has been elected to the Chair of Psychology in the College de France made vacant by the resignation of Professor H. Ribot.

INCREASE OF INSANITY IN ONTARIO.—According to the report of the inspector of lunatic asylums for the Province of Ontario, there were in these institutions on September 30, 1901, 4,604 patients as compared with 3,318 twelve years ago. The population for the different asylums in the Province is set down as follows: Toronto, 724; London, 1,034; Kingston, 509; Hamilton, 1,029; Mimico, 605; Brockville, 613. A comparison of the relative increase of insanity with the population shows that while the provincial population has increased from 1,396,091 in 1861 to 2,182,942 in 1901, or 56 per cent., the number of insane and idiots, officially known, has increased in those forty years from 1,631 to 5,880, or 260 per cent. The ratio forty years ago was one to 856; it is now one to 371. Of course, there is a great

change in public sentiment within that time with regard to placing patients in asylums for treatment.

ILLINOIS GENERAL HOSPITAL FOR THE INSANE.—With the arrival and installation of a hundred inmates from the Illinois Central Hospital for the Insane at Jacksonville, the asylum for the incurably insane at Bartonville was formally opened for the reception of patients February 10. From now on the State Commissioners of Public Charities will cause to be transferred from the State Insane Hospitals at Jacksonville, Elgin, Kankakee, Anna and Watertown, with the consent and concurrence of the Superintendents and Trustees of these institutions, such number of incurable patients as the new institution can accommodate. The next installment of transfers will be made later, when 200 patients will be sent from Kankakee and Elgin, one hundred from each place. This institution was built for the care of insane persons for whom there is no hope of recovery. These were so numerous at the State hospitals for the insane that it was believed by the officials that their presence was a hindrance to the successful work on the curable patients. For that reason it was decided to separate them. The capacity of the new institution, while fitted with employees' quarters, domestic buildings, heating and electric plants and storage buildings sufficient to accommodate two thousand patients, is at present limited to about seven hundred, since the cottage and dormitory room will accommodate only this number. Until more ground is acquired the present facilities will not allow for the care of more than that number, and the next General Assembly is depended upon to see that provision is made for more cottages. Meantime, the structure commonly known as the employees' building will be utilized exclusively for the care of patients.

GOVERNOR ODELL has signed the State Lunacy Bill placing the New York State Hospitals under the control of a centralized board of control. It is expected that the bill for a like procedure in the control of the State Charities will soon be drafted and railroaded through, as was the State Lunacy Bill.

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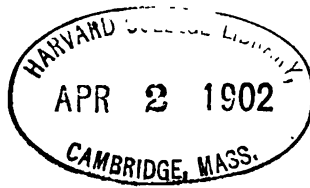
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THE
Journal
OF
Nervous and Mental Disease.

Original Articles.

**A CASE OF METASTATIC CARCINOMA OF THE SPINE
AND MENINGES.**

BY ALBERT C. BUCKLEY, A.M., M.D.,

DEMONSTRATOR OF NORMAL HISTOLOGY IN THE MEDICO-CHIRURGICAL
COLLEGE; ASSISTANT TO NERVOUS CLINIC, MEDICO-
CHIRURGICAL HOSPITAL, PHILADELPHIA.

The case reported in this paper is of interest not only because it is one of a class of diseases which rarely occurs, but also for the reason that some of the symptoms usually associated with cancer of the spine were not present.

I am indebted to Dr. Charles W. Burr for the privilege of studying the case clinically, and for the opportunity of studying the pathological material obtained at the necropsy.

K. B., female; aged 63; nativity France, was admitted to the Philadelphia Hospital February 12, 1901. The family history was negative. The patient had been in good health until six years previous to her admission to the hospital, when she had an attack of what she called "rheumatism." During the same year she injured her left breast, to what extent is unknown.

One year before she entered the hospital she had an attack of violent pain in the back. This lasted but a day, and she was able to be out of bed the following day, though she had some difficulty in walking. This difficulty steadily increased, and for three months previous to admission to the hospital she had been confined to her bed.

She complained of pain in the left shoulder, inability to control her bladder, that is, the urine dribbled, and there was obstinate constipation. No other definite subjective symptoms could be obtained.

Physical Examination.—The patient was confined to bed because of inability to move her legs. There was no palsy of the face; the tongue protruded straight; there was no palsy in either arm, but both hands were weak and when extended there was a tremor in both. There was a slight bowing of the spine in the superior thoracic region—that is—the patient was “stoop-shouldered,” but there was no angular deformity.

Both legs were completely paralyzed and there was bilateral “foot-drop.” The legs were edematous, particularly the right. There was wasting of the thighs and calves, particularly the left thigh. Muscle reactions were not taken. As to the reflexes both biceps-jerks were slightly increased. The knee-jerks were absent. The Achilles-jerk was present on the left but absent on the right. Stroking the sole of the left foot caused extension of all the toes except the little toe, and this was very marked. On the right side there was very slight extension of the great toe.

Sensation to touch was normal on the face, hands and arms. In the legs it was preserved, but the patient could not localize.

The blood-count showed a great diminution of the red cells, 2,250,000; and an increase in the leucocytes, 13,500.

There was a large ulcerating bed-sore over the sacrum, another on the hip, and a third (a small one) over the right superior iliac spine. The left breast was the seat of a hard nodular growth.

The patient's condition grew rapidly worse, the bed-sores becoming larger, and wherever there was pressure others appeared. On the seventh day after admission the temperature became subnormal and remained between 94 and 95, until her death, which occurred on the eleventh day.

The necropsy, made by Dr. W. F. Hendrickson, revealed the following: the left breast showed an indurated mass, the cut surface was mottled grayish-yellow, and showed many interlacing white bands. There was no ulceration, nor were the axillary lymph glands enlarged. There was edema and hypostatic congestion of the lungs, the liver was large and fatty, and the spleen contained several infarcts. The kidneys were of the small granular variety, and the aorta was considerably thickened, being calcified in patches. There were no metastases in any of the viscera.

At the level of the fourth dorsal vertebra and extending

downward about five centimeters, the dura was adherent to the adjacent bone. On separation, the surface of the greatly thickened dura was seen to be covered with grayish-pink granulations. There was no apparent involvement of the pia or arachnoid. At this same level, there was a slight kyphosis, and the bone was distinctly softened, cutting like cartilage, but there was no tumor of the bone.

For histological examination, pieces of the diseased bone and the first four cervical segments of the spinal cord were hardened in formalin. The remainder of the cord was hardened in Müller's fluid. Sections of the bone were stained with hemalum and eosin; the cord sections were stained with the Weigert method, hemalum-eosin, hematoxylin-eosin, and sodium carminate. The primary growth was sectioned and stained by Dr. Hendrickson, to whom I am indebted for slides of the same, which show all the characteristics of scirrhus carcinoma. Sections made from the affected vertebræ show very little bone substance, nevertheless, between the trabeculæ-like masses of osteoid tissue may be seen nests of cells similar to those in the primary growth. Some of the trabeculæ are cartilaginous in appearance. In the areas where there is not an invasion by the cancer cells, there is an infiltration of round and spindle-shaped cells, together with leucocytes. The periosteum is thickened and infiltrated though not with cancer cells.

Grossly, the cord showed a thickening of its dura extending from the fourth to the ninth dorsal segments. After hardening there could be seen extending throughout the cervical, and in the dorsal region as far as the seventh segment, a light-colored area corresponding to the postero-median columns. In the seventh segment no such localized area could be discerned, except in the lower part, where the crossed pyramidal tracts were seen to be affected, extending as far as the lumbar part of the cord. Sections were made from each segment, beginning with the first cervical and ending with the conus.

In the cervical segments, sections stained with nuclear stains show the pia to be infiltrated with small round cells, which infiltration follows the path of the blood-vessels. The veins show a marked infiltration of the connective tissue surrounding them. The white matter shows an increase in the neuroglia, particularly in the posterior and lateral parts of the cord, as is evidenced by the large number of nuclei of glia cells. Here and there can be seen vacuoles replacing the nerve fibers. The gray matter shows its substance to be very vascular, the ganglion cells being for the most part normal. The

central canal is patulous and the cylindrical epithelium easily distinguished.

In the Weigert-stained preparations, an area of apparent degeneration appears in the column of Goll of each half of the cord. This area extends but two-thirds of the distance from the periphery to the gray commissure. When examined under high power the apparently degenerated (that is, the faintly-stained areas) show an increase of the neuroglia, rather than an actual degenerative process, inasmuch as there are many well-staining nerve fibers distinctly separated from each other by neuroglia. In the fifth segment the direct cerebellar tract shows a distinct neuroglial increase.

The dorsal part of the cord shows the greatest amount of change. The upper segments are in some respects similar to those of the cervical part of the cord. The dura is thickened, more posteriorly than anteriorly; the pia is also somewhat thickened, its vessels distended with blood and their walls infiltrated with small round cells, particularly beneath the intima. The entire cross section gives the appearance of a distinct neuroglial overgrowth, most marked as before mentioned, in the posterior columns (Goll). In Weigert-stained preparations these columns are but faintly stained, and in the vicinity of Gowers' bundle in the left half of the cord there is a marked increase of neuroglia. In the part of the white matter where the neuroglia is not so marked the axis-cylinders are swollen. The ganglion cells seem not to be changed except that their protoplasm is slightly granular. As the sections descend the thickening of the membranes becomes more marked and the interstitial overgrowth increases in the white matter. The cellular infiltration becomes more marked and seems to have invaded the nerve roots. Upon examining the upper part of the third dorsal segment, the outer surface of the dura on the anterior aspect of the cord shows a small amount of loose connective tissue adhering to it, and in the lymph spaces are seen several nests of large, deeply-stained nuclei, most of which are larger than a mononuclear leucocyte, and are apparently identical with the cells of the primary growth in the breast and those in the vertebræ. The nerve roots do not contain any of the cells just described. The fourth, fifth and sixth segments show a very much thickened dura and a much greater number of nests of large cells. In sections from the fifth segment one of the nerve roots contains a single cluster of cells similar to those found in the dura.

The sixth dorsal has the greatest amount of thickening of the dura and of infiltration with cancer cells. No cancer in-

filtration is seen in the pia. In sections stained by the Weigert method, the replacement of the nerve fibers by neuroglia is shown to be in patches both in the posterior and lateral columns. The gray matter contains an overgrowth of neuroglia and is not easily distinguished from the white matter, containing, however, numerous apparently normal ganglion cells.

At the level of the seventh dorsal segment the destruction is most marked. The growth of neuroglia far exceeds that found in the other segments, and is most marked posterior to the gray commissure and in the lateral columns of the right half of the cord, where the nerve fibers are practically absent. Sections made in the upper part of the segments contain more normal fibers than the deeper ones. In the lower third of the segment (approximately) the interstitial tissue is more diffusely arranged, except in the crossed pyramidal tracts, where there are no normal fibers to be seen. The central canal is patulous in the upper part of the segment, but where the greatest amount of connective tissue is found the canal is filled with deeply staining round cells. The gray matter is shrunken and distorted, no ganglion cells can be found. The vessels in the nerve roots stain very faintly, though the cells of the intima are apparently normal. The vessels in the meninges stain deeply.

Below the seventh segment the meningitis is less marked. There are a few cancer cells to be seen scattered irregularly through the various segments. Some sections, however, show none. The proliferation of neuroglia is less marked than above, as is the degeneration in the crossed pyramidal tracts. Where there is an actual degeneration it occurs in scattered patches in the crossed pyramidal tracts. In the eighth segment the artery of the anterior fissure is very much thickened, the intima in particular. This is more marked than at any other level. The tenth segment shows more of the carcinoma infiltration than any of the segments below the seventh, and is much less than that described above. The cells of the anterior horns are very much shrunken—nuclei in many instances cannot be seen, and in others, the nuclei are pushed to the extreme edge of the cells.

The lumbar segments do not show marked changes in the white substance. There is an increase in the neuroglia, particularly in the crossed pyramidal tracts, and a few scattered patches of degeneration. There is a mild grade of meningitis; the nerve fibers in the roots stain very well by the Weigert method—better in the anterior roots than in the posterior, though hematoxylin-eosin stained preparations show an

increase in the number of small round cells among the nerve fibers.

That carcinoma of the spine is a rare disease is shown by the work of Schlesinger, who, after examining the reports of the Vienna Pathological Institute, found that in 3,720 cases of carcinoma there were 54 with metastasis in the vertebræ and meninges of the spinal cord. In addition, he speaks of five cases observed personally. This report together with the very complete bibliography which accompanies it, has been valuable to me in studying the subject.

It is held by some that cancer of the spine may occur primarily, but the bulk of evidence seems to prove that it either occurs as a secondary growth, or from contiguous structures. When the growths in the spine are metastatic, as they are in most instances, they most frequently follow carcinoma of the breast, as is shown by the following table (Schlesinger's):

| Breast | in 10 cases. | |
|-----------------|--------------|---|
| Esophagus | " 9 | " |
| Thyroid | " 9 | " |
| Uterus | " 6 | " |
| Bronchus | " 5 | " |
| Stomach | " 4 | " |
| Prostate | " 3 | " |
| Gall bladder | " 2 | " |
| Ovary | " 1 | " |
| Sigmoid flexure | " 1 | " |
| Rectum | " 1 | " |
| Kidney | " 1 | " |
| Adrenal | " 1 | " |
| Pancreas | " 1 | " |
| Not specified | " 1 | " |

Bruns reports five cases occurring after breast disease. Osler describes four cases, one of which gave symptoms of increased reflexes and nerve-root pain only. In none of his cases was there an autopsy. Boettiger reported a case in which, after removal of a mammary growth, there were spinal symptoms and the findings of cancerous infiltration into

the vertebræ. Amidon reports three cases and reviews the literature, concerning thirteen cases.

Two cases are reported by Scanzoni—one, in which the growth, secondary to cancer of the breast, invaded not only the vertebræ and meninges, but also gained entrance to the substance of the cord at the point of entrance of the posterior roots. The second case, after carcinoma of the thyroid, showed the substance of the cord to be involved, the process having followed the line of the anterior root and the posterior median fissure. Terrier describes a case in which the lower three lumbar vertebræ and part of the sacrum were affected secondarily to cancer of the breast. There was no involvement of the cord or nerves. Concerning metastasis in the spine after carcinoma of other organs, several reports occur in the literature. Simon mentions two cases—one, after cancer of the kidney with involvement of two lumbar vertebræ; another, following cancer of the esophagus with involvement of the cervical vertebræ. Nonne reported a case following cancer of the stomach.

Like other forms of spinal disease, carcinoma produces symptoms referable to the bone, the nerve-root and spinal cord.

Of the bone symptoms deformity is the most important. It is not always present, and when observed it is usually less marked than that in tuberculous spinal disease. According to Amidon's table, the deformity exists most frequently in the dorso-lumbar region. Bone pain is not a constant symptom and when it is present, the diseased vertebræ, in many instances, are not sensitive to pressure. Rigidity of the spine is usually present.

Of the nerve-root symptoms, those sensory are usually the first noticed. Pain is the most important, and usually continues throughout the course of the disease, though some cases do run their course without severe pain. The pain associated with the motor symptoms led Cruveilhier to term it "*paraplegia dolorosa*," which condition Charcot later associated with cancer. The important feature concerning the pain is that it is radiating in character, and made worse by

movement. Anesthesia is said not to be frequent, but hyperesthesia and paresthesia are common symptoms. Herpes zoster occurs in many instances.

Of the motor symptoms, the palsy, though not the first symptom, may come on suddenly. Schlesinger cites a case in which it came during the night—no lesion of the cord substance having been found, but the nerve roots were distinctly damaged. He also mentions the fact that where the nerve roots alone are affected, fibrillary twitchings are apt to precede the palsy, and atrophy rapidly follows.

The symptoms referable to cord involvement may be slow in onset, the result of an advancing compression myelitis; or, sudden, through the displacement of the vertebræ, and, followed by the symptoms of vertebral caries. The resulting palsy will depend upon the level of the cord affected. In other instances the onset is similar to that of a transverse myelitis with palsy of the extremities below the lesion, loss of control of the bladder and rectum, loss of sensibility, skin and tendon reflexes, followed by atrophy and trophic ulceration.

The case just related gave an indefinite history of pain, called "rheumatism," several years before there was any difficulty in muscular activity. Whether this is one of the cases, as are described by Charcot, in which the cancer remains latent in the vertebræ and suddenly becomes active, is impossible to say, as the personal history furnishes no definite guide. The pain, in all probability, was not a nerve-root pain, since other symptoms, which would have been associated with it, were not present. During the height of the disease there was little pain. There was no visible deformity of the spine. There was a flaccid palsy of both legs; bladder and rectal control were lost; with the exception of one Achilles jerk and the Babinski reflex on each side—more on one than the other—the reflexes were lost.

From the foregoing facts it may be concluded that the pain, which together with the other sensory symptoms, may exist for a long time without any palsy, is due, not to the bone disease, but is the sign of nerve-root involvement. On the other hand, when absent, palsy and other cord-symptoms

being present, it is to be inferred that the cord-disease has been so rapid as to exclude the transmission of sensory influences, in which instances there will also be anesthesia; or, that the nerve roots are not at all affected. Secondly, that the palsy may be due either to pure root involvement, or to disease of the substance of the cord—a compression myelitis. Thirdly, that vertebral carcinoma may run its course without severe pains, therefore, not always producing the “paraplegia dolorosa.”

The absence of severe pains with the presence of nerve-root involvement at levels of the cord higher than that at which there was a great destruction of its substance, can only be explained by the personal equation, since we know of the presence or absence of pain by the word of the patient. The absence of anesthesia in this case makes it impossible to account for the absence of pain in any other way. The absence of marked deformity simply means that the secondary process in the cord (the interstitial overgrowth) following the meningitis progressed more rapidly than the neoplasm in the vertebræ.

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A CASE OF INTRACRANIAL DISEASE INVOLVING THE
CHIASM, AND ALSO PRODUCING PROFOUND
MENTAL AND NERVOUS DISTURBANCES.*

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AND

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Mrs. E. D. T. was first seen by one of the writers (Loveland) on April 30, 1900. She was led into the room apparently totally blind, stooping and tottering as she was helped to a chair. She was of medium height, about thirty years of age, and weighed 140 pounds. Her complexion was slightly pale, but her lips were of good color. Her father was alive and healthy. Her mother died at 48 years, from cancer, which recurred after an operation. As a girl she was healthy, but not robust. The only thing ascertained as illness before marriage, was, that one winter while in school she found it difficult to keep awake, yawned constantly, and could hardly study on account of sleepiness. This condition lasted several weeks.

She was married at 21 years of age, has had two confinements, and one miscarriage, the youngest child being six years old; the miscarriage occurred about seven years ago, midway between the two confinements. Her children were "thin and skinny," as she expressed it.

She had iritis about a year after marriage, the left eye being affected, but denies ever having had any skin eruption or other signs of specific disease. Some months later I learned that her husband had had a sore which left no scar about a year before his marriage, but denied ever having had any other signs of syphilis. About five years ago there was a period in which she slept very soundly, and did not know on waking what had transpired before she went to sleep, but after her memory was prompted she would recollect. This condition was transient. At this time on one or two occasions she said she could hear, but could not understand what people said to her.

For the past four years she has been well until March 1899, when she ceased to menstruate, and thought herself

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pregnant, holding that opinion for five months, during which time she ate ravenously hoping for a fat child. On this account she grew very stout. She felt well, and was much occupied with the care of a sick grandmother. At this time she was told that she had a tumor, and must have an operation, but as her mother had died after an operation for cancer, she refused to go to the hospital.

From the time that she gave up the idea of pregnancy, she slowly lost flesh, but is still fat, while her heaviest weight was 186 pounds. At the same time she began to complain of pain in different parts of her body, and this pain made it difficult for her to walk or assume an erect posture; she slept a great deal, but waked frequently and sat up to ease the pains in her legs. She grew progressively weaker, and until shortly before she came to me (Loveland) was treated for rheumatism.

She had been steadily losing her sight for four months, until now she could scarcely detect light. She complained of great pain in the legs and back, weakness, thirst polyuria, uncontrollable sleepiness, especially in the daytime, and constant yawning when awake. She used to drink a quart or more of water during the night, waking frequently, but going to sleep again after relieving her thirst and emptying her bladder. She passed nearly four quarts of urine in 24 hours, sp. gr. 1006, no albumin or other abnormality.

She never complained of pain in her head or eyes since the iritis mentioned. Her temperature was normal, but her pulse, though regular, was 112. Her tongue was coated and dry. She showed great muscular weakness, and could not make a record on a dynamometer. All her bodily hair had fallen out, and that on her head was dry and falling out. There were no signs of disease of the abdominal or pelvic viscera. There was general hyperesthesia, slightly exaggerated knee-reflexes, and ankle-clonus. There was slight tremor on motion, and a considerable degree of rigidity of muscles, especially of legs and back. She protruded her tongue slowly, and with tremor, but in a straight direction. Her palate was high-arched; pupils were large, and the left one irregular from previous iritis. The pupils reacted feebly to light, but failed to react when all sense of light had been lost a day or two later.

The optic discs were somewhat pale, but beyond this the ophthalmoscope showed nothing to account for her blindness. Retina had also been examined in Feb. 1900, and was again on May 2, by an oculist who was unable to detect any pathological change in the fundus. She seemed very leth-

argic, or apathetic, both mentally and physically, slow to speak and slow to comprehend. She yawned several times a minute when awake, and would fall asleep while being asked questions.

A diagnosis of specific disease affecting the brain and optic chiasm or tracts was made, and it was thought that some of the symptoms might be hysterical.

She was put on full doses of yellow iodide of mercury, and pills of *asafetida* and *nux vomica*.

During the first week or so a test was made almost daily to see if she could detect light, and at her worst she could not locate a Welsbach light a few feet from her, or see bright sunlight. Improvement was rapid under the treatment prescribed, and on May 9 she could detect light but not form, and talked and acted much better. Mercury was discontinued for two or three days on account of signs of salivation, and then given in smaller doses, and strychnia was substituted for the *nux* and *asafetida* pill.

On May 12 she could see moving objects, as people or carriages, but could not count fingers. She still complained of pain and soreness, worse in her knees.

On May 14 she saw the colors of a flag, and told what it was, and also walked much better. Read Snellen's 200-ft. test type at 3 1-2 feet.

On May 17 acuity of vision was improved, but hemianopia was noticed. On this date she was taken to Dr. Marlow, and his report of her ocular condition and improvement is as follows:—With the right eye she counted fingers badly at a foot; with the left her vision was 9-140. The pupils reacted promptly to light, but the indirect action of the right was much better than that of the left.

The optic discs were decidedly pale, but there were no white lines along the arteries, or other changes in the blood vessels. The edges of the discs were sharply defined.

Examination of the field of vision showed total loss of the left half of each field, and a partial loss of the right half in the right eye. The condition of the right eye would be better described by saying that vision was present only in a portion of the right half of the field, the fixation point and region around it being included in the blind area. It was, therefore, impossible to make an accurate chart of the field. In the left eye, however, vision was present at the fixation point, consequently the chart of this eye is probably an accurate representation of the field at the time.

On June 1st, vision of the right eye had risen to 6-24, and that of the left to 6-6; the improvement of the conduction of

the light impulse in the right eye being shown by the fact that the indirect reaction of the pupil of the left eye had become as good or very nearly as good, as that of the right.

Careful examination of the pupils demonstrated also the presence of the Wernicke hemianopic pupillary inaction sign. Examination of the fields at this time showed marked improvement, mainly in the right eye, and also that the line dividing the seeing from the blind half of the field passed through the fixation point, or within a degree of it. The vision of both eyes improved so that on Aug. 2d it was 6-6 in each eye separately, the left being still a little better than the right.

On Sept. 7th she sees and locates the light of a candle placed near to her in the blind half of the fields, but does not recognize the form of the candle until it crosses into the right half of the field—that is to say, she has a returning light sense

Left Eye

Right Eye

Fields showing loss of vision with exception of light sense.

in the left half of each field, but no form sense. This change is accompanied by a disappearance of the pupillary hemianopic inaction sign.

Oct. 13, no change. Letters of the lower line of test type dance or disappear as she looks, large letters do not. As it was thought that this might be due to a rhythmical movement of the eyes necessitated by the fact that the dividing line passed through the fixation point, she was tested on the ophthalmometer, a small printed word being used for fixation, and the corneal image found to be unusually steady, although there was a fine, fairly rhythmical lateral movement.

Nov. 1, tested carefully to determine the gain, and the relation of the dividing line to the fixation point; the result going to show that it lies at a distance of about 5" from the

fixation point. (The button on the perimeter used for fixation measures 5mm. in diameter, and has a screw measuring 3mm. in its center. The white test object is never seen until it impinges on this screw.) This observation was made with great care on each and every occasion upon which I measured the field of vision, with the invariable result of producing a chart of the field in which the line separating the blind from the seeing half passed through the fixation point.

Dec. 13th, color vision normal, but in the right eye there is a relative scotoma for red and green—red being called pink at the fixation point and for about 5° around it; green being called white. In the left eye there is no scotoma.

The history of complete blindness, with dilatation of the pupils, and complete loss of light reflex, without ophthalmoscopic change can only be explained by a lesion lying at the optic commissure, or between it and the corpora geniculata. The fact that the blindness commenced in both eyes, the subsequent history, and the repeated examinations seem to indicate that the lesion, so far as it affected the visual apparatus, probably commenced at the commissure, and gradually receded, leaving the fibers coming from the left optic tract in a practically healthy condition.

The presence of a residual central color scotoma in the right eye, and its entire absence from the left, suggests that the lesion either commenced at, or at some period extended to, the right optic nerve itself, or a part of the chiasm anterior to the point where the crossed and uncrossed fibers join to form the right nerve. For, had it been entirely limited to this point and the parts posterior, we should expect to find the residual color defect hemianopic in character.

In addition to its being an example of that comparatively rare condition—chiasm disease—this case differs from the majority of reported cases of hemianopia chiefly in two respects. First—the hemianopia occurred as a symptom of returning health, rather than of advancing disease. From a condition of complete blindness, we have an almost perfect homonymous hemiopic recovery. Second—the line dividing the seeing from the blind half of the field passes practically through the fixation point. The observations on this point were repeated so many times, and on so many different occasions, that no doubt remained that the test object came well within $15''$ and probably to $5''$ of the fixation point before it was seen.

It will be remembered that in the vast majority of cases the dividing line does not go through the fixation point, but skirts around it at a variable distance of several degrees, leav-

ing it in the seeing half of the field. So universal is this observation that it has given rise to the theory that the macular region of the retina has a double representation in the cerebral cortex—is, in fact, completely represented in each hemisphere, and consequently in each optic tract.

It is evident that the facts in this case do not harmonize with this theory. From a condition of complete blindness, we have seen recovery of one half of the field with normal central acuity; nevertheless, the recovery in the region of the fixation point, or macula, is strictly hemiopic. We must infer that the optic tract, and the corresponding hemisphere contained fibers from one-half of the macular region only.

It is interesting to note the progress of recovery. From March until the end of April complete blindness, dilatation of pupils, and no reaction to light.

May, latter half, hemiopic restoration of vision, left and right. Reaction of pupils with marked hemianopic pupillary inaction.

June. Rapid improvement in vision.

September shows some return of light sense in the blind (L.) halves of the fields, and this is accompanied by the loss of the hemianopic pupillary inaction sign.

October shows improved light sense and projection, but absolute inability to recognize form in left halves of both fields.

From a condition of total blindness, there was a recovery of light, form and color sense on one side, and of light sense on the other half of the field.

The restoration of light sense led to the hope that there might later be a restoration of the form and color sense, but essentially no change has taken place in eight months, so it is unlikely that any further improvement will occur.

During the time covered by Dr. Marlow's report of the patient's eyes, her general condition has improved in a very satisfactory manner. A few things need special note however. On May 19th, saturated sol. iod. potassium, in ten-drop doses, three times a day, was substituted for the yellow iodide of mercury, the doses being increased one drop a day till 25-drop doses were reached. She has taken these doses three weeks out of four up to the present time, the only effect being that she seemed to have a cold in the head when the remedy was first pushed, but this was the only sign of physiological action. Strychnia was also continued for a long time.

As she began to lose her somnolence, and to improve in mental acuity, she seemed to suffer more pain, and slept poorly at night.

In my notes of July 13, 1900, "Can read brevier type at an ordinary distance with either eye, but tires very quickly. Her muscles and eyes both seem very weak, and become exhausted on slight exertion."

September 1. Pain in knees is much better, and she sleeps well at night. She had complained grievously of her knees, but there was never anything objectively wrong with them, except that early in her sickness she could not straighten them, owing to the rigidity of the muscles referred to as one of the symptoms.

November 8. She feels, looks, and acts much better every way, but still is stiff on rising, after occupying any position long. Potassium iodide was ordered to be taken three weeks, then to be omitted for a week. From this date to the present there has been practically no change in her vision, except that she can read or write without such fatigue as she had at an earlier period. She has gained much in both muscular and nervous strength, has done her own housework for a long time, and walks out a good deal. Her grip on the dynamometer only amount to 18, but a year ago she could not make a record on it.

Since this case did not furnish an autopsy, we can only speculate as to the exact location of the lesion in the brain. It was evident at the first that there was some profound cerebral trouble, but it was also plain that the motor tract was at least only indirectly affected; and the somnolence, which suggested the region of intellection, was so like that she had when a girl in school, that it made the family think she was hysterical and indolent, as in the former instance.

The blindness, and later, the ophthalmoscopic examinations rendered us important aid in locating the trouble, viz.: by showing us that optic neuritis was not present, and probably had not existed; that the atrophic appearance of the optic nerve was suggestive of secondary, rather than consecutive atrophy; and consequently we had to deal with a mass pressing on the chiasm and tract, rather than with a basic meningitis.

These considerations, together with the fact that the mental symptoms were more marked than the physical, make it probable that the lesion began in the third ventricle, and that most of the symptoms were caused by pressure; that affecting the visual apparatus beginning at the chiasm or very near to it, and later its influence being limited to the right tract, and that it remained long enough to cause the permanent hemianopic defect. The polyuria and rapid pulse were very slow in passing away. She has not menstruated nor shown signs of a cycle of ovulation.

A CASE OF MULTIPLE LESIONS OF THE SPINAL CORD
AND CRANIAL NERVES WITH AMYOTROPHY, DUE
PROBABLY TO SYPHILITIC INFECTION.¹

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J. B., aged 34, brewer by occupation, came with the following history to the Neurological Clinic of the Jefferson College Hospital. In July, 1900, he began to feel pain in the right supra-orbital region, which lasted until October. Glasses were adjusted and pain became easier. In September a ptosis of the right eye developed very rapidly. At that time he noticed that he saw double, which condition has continued up to the present time. Two months later he began to complain of pain and weakness in the left thigh when he walked or stood, but when resting there was no pain. As soon as he starts to walk, pain appears in the left knee, and while walking extends to the whole thigh. In May, for the first time, he experienced shooting pain all along the left limb. Besides the pain the patient complained also of sensation of heaviness in the left thigh when he walked or attempted to get up, or on going upstairs. This condition of heaviness has been present from the onset of the disease. At about the same time he commenced to have some trouble with micturition: it was somewhat difficult; he had to wait a few minutes before he could urinate. This condition exists at the present time. He has been constipated for many years. Patient was always healthy. Never had any infectious disease, except gonorrhea about seven years ago; it lasted but eight days. He has been married for the last two years, has one child, which is healthy. No history of miscarriages. Has one brother of forty-two, who is in good health, two sisters who are married and in perfect health. Father and mother are about seventy and in good health. Patient had worked in a brewery since the age of

¹Read before the Philadelphia Neurological Society.

fourteen, has therefore been exposed to cold and dampness. Alcoholism and syphilitic infection denied.

Present Condition.—Patient weighs 158 pounds, height 5 feet, 10 inches; chest circumference 41 inches. He is very well built and powerful. Excellent stature. Excellent and healthy appearance.

Examination shows: Gait normal with open eyes, but somewhat difficult with closed eyes. Cannot stand on the left leg, but does it with difficulty on the right. Station with closed eyes presents a normal sway. Sensations (touch, pain and temperature) normal. Besides heaviness he complains of cramp-like sensation in the left leg, occasionally in right. Knee-jerk on the right is exaggerated, on the left lost, even on reinforcement. Some rigidity in the right leg, flaccidity in the left. No ankle-clonus on either side. Babinski present on both sides, more marked on the left than on the right. Musculature: Upper extremities are apparently equally developed on both sides, no evident atrophy. The left scapula distinctly recedes from the thorax, and Bechterew's reflex is more marked on the left than on the right side. Dynamometer shows 75 for R. and L.

Lower extremities: Cyanosis on the left side, skin colder on the left than on the right. The vastus internus on the left is very flabby. The measurements are as follows: taken in the middle at equal distance from the upper border of the patella the circumference of the left thigh is 38 cm., of the right 44 cm. The legs at the same distance from the lower border of the patella show 27 1-2 cm., for the left leg, and 29 for the right. Left knee-joint is larger than the right. The musculature of the legs is too small in comparison with the rest of the body above the umbilicus.

Electrical examination gave the following result: *Left limb.* Examined with a galvanic current, the muscles of the whole member show that the AnCC is equal to the CaCC, more marked in the vastus internus, except that of the postero-external aspect of the thigh, where the CaCC is but very slightly stronger than AnCC. With a faradic current very little response to a current of average strength was found, and to obtain a normal contraction a very strong current was required. *Right limb.* Under galvanic current the muscles of the thigh present the normal formula, but those of the leg present some change: the CaCC is but slightly stronger than AnCC. *Eyes.* Right pupil larger than left, and does not react to light. Left reacts sluggishly to light. The right eye presents an ophthalmoplegia; this is very marked in the upper and lower movements of the eye; on the nasal side there

is only a partial paralysis of the muscle. The movement of the eye-ball externally is complete. Ptosis was very marked when we first saw him, but it is improved. The ciliary muscles are also paralyzed.

Summing up the case we see a progressive muscular atrophy of spinal type limited to the lower extremities, pronounced in the whole left limb, and less marked in the right leg, with an increased deep reflex and rigidity on the right side, and loss of reflex with flaccidity on the left, slight disturbance of micturition—all this developed in a patient who presents a characteristic nuclear ophthalmoplegia. The case seemed to us quite unusual, and we hesitated in classifying it. The diagnosis can be made in our opinion only by exclusion. Multiple neuritis, tabes, anterior poliomyelitis of adults, amyotrophic lateral sclerosis and syphilis of the cerebro-spinal axis were taken into consideration.

Multiple neuritis may follow exposure to cold such as was the case in this instance, also give rise to loss of power early in the disease; the muscles atrophy rapidly and become flabby, the deep reflexes are lost. In spite of the presence of these few symptoms, we cannot accept the diagnosis of multiple neuritis in our case, as the onset, course and other symptoms are not to be found in this disease: we do not find the sudden onset of infectious character: no chills, no elevation of temperature, no premonitory symptoms, like malaise, headache, etc. Nor do we find the typical course of multiple neuritis. Tenderness of the nerve trunks under pressure is absent and the electrical reactions show changes which we do not find in multiple neuritis.

Anterior poliomyelitis should next be taken into consideration. This disease may occur in adults as well as in children. It is the result of an infection which has its seat of predilection in the gray matter of the anterior horns. If the acute form of this disease presents an onset infectious in character, there are, nevertheless, subacute and especially chronic varieties where the onset is slow, and the last form we find mostly in adults. In a few isolated cases of chronic poliomyelitis progressive muscular atrophy was found, but

this is quite rare. Dejerine² reports a similar case in a syphilitic patient, but the atrophy was more marked in the upper extremities than in the lower. Autopsy proved that it was a case of a simple chronic poliomyelitis; in the whole cervical region the cells of the anterior horns had disappeared and the anterior roots were very much altered. The white columns remained normal. In our case atrophy is present in the lower limbs, but the other symptoms are not those of anterior chronic poliomyelitis, such as was conceived by Charcot and Vulpian. It remains for us to consider the possibility of amyotrophic lateral sclerosis, or of a multiple disseminated syphilitic infection of the cerebro-spinal axis. The first of these two affections should be thought of at the first glance.

We have here progressive muscular atrophy of the spinal type; gradual wasting of muscles of the whole left extremity, and partially of the right leg; the fibrillary contractions are absent, but the electric reactions are in accord with the idea of a spinal muscular atrophy; the knee-jerk is lost on the left side, but exaggerated on the right; flaccidity on the left, rigidity on the right side; Babinski's sign present on both sides. We may therefore admit an involvement of both the gray matter and lateral columns on the right side of the cord, but an involvement of only the gray matter on the left. Consequently we are in presence of multiple lesions distributed unequally on both halves of the cord, and the classical type of amyotrophic lateral sclerosis cannot be accepted.

Multiplicity of lesions all along the cerebro-spinal axis, manifold in their manifestations, various in localizations, supervening almost simultaneously in different portions of the cord, extending to the medulla and involving nuclei of cranial nerves, all this suggests syphilitic affection of the nervous system. The only unusual atypical point in our case is the amyotrophy.

Muscular atrophy of myelopathic type in systemic diseases of the cord is quite rare. Dejerine thought that tabetic amyotrophy was of peripheral nature, but Leyden, Charcot, Pierret, Marie have found alterations of the anterior horns. The microscopical studies show that the degenera-

tion of the cells of the anterior horns may take place in two ways: one is the ordinary poliomyelitis, an acute disease which destroys not only the cells, but also other histological elements of the anterior horns; it is an affection of the trophic center which alters the peripheral motor path. The other is an affection of the anterior horns which begins in an insidious way and very slowly; we find it in toxic and tabetic amyotrophies. The clinical character of tabetic amyotrophy is totally in accord with the histological changes. We know that the collaterals of the posterior roots reach and surround the motor cells of the anterior horns. In tabetic degenerations those collaterals disappear, and if the stimuli for the motor and trophic cells of the cord no more exist, we can readily understand why we find the changes in those cells, changes that are first of dynamic and then histologic character. But if amyotrophies in tabes are rare, they are still rarer in specific affections of the cord. The perusal of the literature at our disposal for the last five years convinced us that there are only a few reported cases of amyotrophy in syphilis. The older writers mention occasionally syphilis as the causative factor of muscular atrophy. In one case Shmauss reports a flaccid paralysis and rapid wasting of the muscles, and at autopsy a focus of softening in the gray matter of the lumbar cord.

Among recent writers we find one case of Rendu and three cases of Raymond³. They all present a clear history of syphilis with amotrophy of Aran-Duchenne's type. Like in our case, the involvement began with a diplopia of the right eye. Discussing the case, Raymond arrives at the conclusion that it was a case of a chronic meningo-myelitis of a diffuse and progressive character. At autopsy he found, besides other lesions, an involvement of the anterior roots and these roots were thin and gray; and disease of the anterior horns where the cells were very much altered, were without prolongations, and without deformed nuclei. The cellular changes were only in the cervical region, corresponding to the amyotrophy of the upper extremities. But what was striking was

the vascular involvement; the vessels were large, overfilled with blood; the same condition was seen in the anterior horns. The white columns were also very much altered. The meninges were involved; those of the spine were soft, and the dura of the cranium was adherent. As to the ravages of syphilis in other portions of the cord, they are too well known to dwell upon. The etiological relation between syphilis and various nervous diseases has been established comparatively recently.

This is particularly true with regard to the spinal cord. The history of Erb's spastic spinal paralysis, or of Charcot's spastic dorsal tabes illustrates sufficiently the rôle of specific infection. Baumgarten and Lanceraux maintain that the first stage of syphilis of the nervous centers is characterized by a periarteritis, which is soon followed by an endarteritis, because of a deficient nutrition caused by an obliteration of the vasa vasorum. The pia is the starting point; the arteries and arterioles which nourish the substance of the cord being obliterated, ischemia is produced, and the gray matter principally suffers from insufficient irrigation of blood. Ehrlich, Brieger and Spranck proved it experimentally. Similar results were obtained by Flourens⁴ and by Panum⁵. If syphilitic infection is capable of injuring various portions of the cord through the large and smallest blood-vessels, the lesions will be various. The predominance of the lesion in certain tracts or in the gray matter will give a picture of systemic spinal disease.

Oppenheim, Ewald, Marinesco called attention to cases of spinal syphilis associated with symptoms of tabes. Minkowski observed a case in which the lesion was localized almost exclusively in the lateral columns, and gave the picture of a primary lateral sclerosis. Mendel and Schuster observed multiple specific lesions in the cord in a case which clinically presented the signs of disseminated sclerosis.

According as the process of destruction of the gray substance is rapid or slow we may observe the clinical types of acute or chronic anterior poliomyelitis.

Syphilis is capable of causing amyotrophic paralysis not

only as a result of a myelitis or meningo-myelitis like in Raymond's cases, but also as a result of a general peripheral neuritis. Gilles de la Tourette's case is the best illustration of this.

Finally there are complex forms which cannot be classified, and in which we find symptoms of involvement of the roots, of the white columns and of the gray matter, symptoms of multiple and disseminated lesions along the spinal axis.

In a recent paper one of us⁶ brought out the importance of infection as etiological factor in various affections of the cord with numerous clinical, pathological and experimental data to corroborate and emphasize this view.

In presenting this case we take the opportunity to again call attention to this point. In all probability our case is one of those many examples where a spinal amyotrophy was caused by infection. The previous history, the course of the disease, the fact that the patient could take high doses of specific remedies, and the amelioration of symptoms under this treatment are in favor of the infectious origin of the muscular atrophy.

We wish to express our indebtedness to Dr. F. X. Dercum for his kind permission to present this case.

⁵Comp. Rend. de la Soc. de Biol. 95, 10, s II, 188.

⁶Bull. de la Soc. Méd. des Hôp., Février, 1893.

⁷Comptes rend. de la Acad. de Sci., 1847.

⁸Exper. Beiträge zur Lehre von der Embolie. Virchow's Archiv., 1862, Bd. xxv.

⁹A. Gordon, Philadelphia Med. Jour., 6-29-1901.

OBSERVATIONS ON FIFTY-FOUR CASES OF LOCOMOTOR ATAXIA, WITH SPECIAL NOTES ON ETIOLOGY.¹

BY DUDLEY FULTON, M.D.,
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Tabulated symptoms of fifty-four cases:

Lost knee-jerk, 88%.
Romberg's symptom, 80%.
Ataxic gait, 77%.
Lightning pains, 73%.
Paresthesia, 70%.
Argyll-Robertson pupil, 67%.
Incoördination, 65%.
Vesical disturbance, 60%.
Paralysis of ocular muscles, 27%.
Sexual weakness, 25%.
Diplopia, 21%.
Girdle sensation, 19%.
Skin reflexes disturbed, 14%.
Ptosis, 11%.
Muscular sense lost, 10%.
Arthropathies, 8%.
Perforative ulcers, 6%.
Crises, 4%.
Muscular atrophy, 4%.
Optic atrophy, 2%.
Nystagmus, 2%.

Of the symptoms tabulated, the six most frequent were, in order mentioned: Lost knee-jerk, static ataxia, locomotor ataxia, lightning pains, paresthesia, and the rigid pupil to light. Closely following these were: Incoördination, bladder difficulties, and ocular palsies. The lost knee-jerk, the Argyll-Robertson pupil, ataxia, and the lightning pains furnish the classical symptom-complex of tabes. The presence of any three of them makes a diagnosis clear; or, the finding of any two with one or two signs and symptoms of minor significance, such as bladder weakness, or diplopia, justifies a diagnosis of tabes.

¹Read at Calhoun County Med. Asso., Aug. 13, 1901.

The order of onset of symptoms varied greatly. Difficulty in walking in the dark, or through a crowded thoroughfare usually first awakened the patient's interest. Often, pains designated "neuralgic" and "rheumatic" preceded the ataxia. Paresthesia was common, being present in 70% of cases, and was often the first symptom. In five or six cases, difficulty in starting the urine, or sphincter weakness, was the first symptom. In four cases, double vision was the initial symptom. In one case gastric crises ushered in the disease.

The conditions which in our experience most often need differential exclusion are certain forms of peripheral neuritis, neurasthenia, spinal syphilis, and early general paresis. The importance of safely excluding the latter graver disease leads me to cite a case, and to discuss briefly the supposed relation of tabes and paresis.

Two years ago a patient in the third decade of life applied for treatment. A diagnosis of tabes was made. He had a lost patellar reflex; his pupil responded to accommodation, but not to light; he had ataxia and gastric crises. Other signs and symptoms were absent. He took treatment several weeks, and was advised to return in a year, which he did. Considerable improvement was noted in walking, and the gastric crises had ceased. One week before his third return, mental symptoms of an exalted nature, with delusions of grandeur suddenly developed. This elation and expansion have largely subsided, and the patient is mentally reduced. The diagnosis is now, undoubtedly, general paresis.

The interesting question is, Was it general paresis two years ago? The German and French schools say that in a certain measure every case of tabes is one of incompletely developed paresis. The majority of neurologists, however, see in paresis an independent disease which is developed in tabetic individuals. According to Fürstner, in 62% of paretics there is found a disease of the lateral and posterior columns of the cord. Accordingly the very earliest signs which may precede the beginning of the abnormal psychical manifestations are those belonging to the symptom-complex of locomotor ataxia—Argyll-Robertson pupil, lost knee-jerk, lancinating pains, incoördination, and bladder weakness. So uni-

versally are physical signs present in paretics, that today one would scarcely care to diagnosticate paresis without the presence of some of the cord-symptoms usually found in tabes.

About a dozen cases—not in this series—were differentiated from tabes before the onset of mental symptoms only by the characteristic clumsiness of speech and tremor of the tongue and muscles of the lower face. In other respects they resembled tabes closely. Two of these patients have within the past year developed the typical mental symptoms of paresis. It can be safely advanced that tremor of the tongue and lips, and changes in articulation, with perhaps mild changes in the disposition of the patient, change the complexion of the diagnosis to the graver malady, general paresis. An early diagnosis of locomotor ataxia is of great importance. The physician's skill in detecting the malady early offers the patient about his only hope of relief.

The prognosis, judging from results obtained with these fifty-four cases, is not altogether bad. Improvement in the general health is almost always observed, and usually those who come in the first, or even the second stage, have the disease processes stopped or delayed for an indefinite period.

Etiology of tabes—The disease is much commoner in men than in women. Of the fifty-four cases presented, two were women. Hereditary influences are rare. Exposure to wet and cold; fatigue; excesses, particularly sexual, are considered predisposing causes; excessive smoking; and the continuous moderate, or the occasional excessive use of alcohol, invite degenerative processes. Fifty-four per cent. of this series gave histories of tobacco or alcoholic dissipation.

The toxins of infective fevers are undoubtedly capable of reducing the resistant powers of the individual, and occasionally play the rôle of exciting causes. Eleven per cent. of these cases followed influenza, and in four per cent. the symptoms of tabes appeared immediately after typhoid fever; four per cent. received a trauma to the spine a few months before the onset of symptoms. Almost all cases developed between the ages of thirty and sixty. In five, the symptoms first appeared in the third decade—a small percentage in comparison

to other series—sixteen in the fourth decade; nineteen in the fifth; seven in the sixth; and two reported first symptoms as late as the seventh decade. I have a patient now in his eightieth year, the diagnosis of whose malady I am yet in doubt, but whose findings point strongly to tabes.

Less importance is now being given to syphilis as a causative agent than formerly; or, at least, greater attention is given to the possible rôle of other poisons. Three distinct positions are taken regarding the existence of a causal relation between syphilis and tabes. The position of extreme affirmation is occupied by Ferrier, and others whose opinions may be briefly expressed, "No syphilis; no tabes." At the other extreme stand Leyden and others who either deny the relation altogether, or hold that it is still unproved. Of Leyden's 108 cases,² only twenty per cent. were syphilitic—a percentage not greatly above that found in non-tabetic patients.

Grimm³ draws attention to the fact that syphilis is rife and virulent among the Japanese and negroes, and tabes rare. Lewin is cited as finding no case of tabes in 800 female syphilitics. Gluch found an absence of tabes in 3,000 syphilitic Bosnians.

Drennen⁴ suggests a possible factor in producing locomotor ataxia in the long continued and uninterrupted administration of large or even measurably large doses of iodide of potassium which is so commonly given at the present day; and other neurologists are seriously considering this possibility.

A middle position is assumed by a great majority of observers who maintain that 45 to 80 per cent. of cases of locomotor ataxia are due to syphilis. Of our cases, including the positive specific, and four doubtful cases, 42 per cent. were syphilitic. But while syphilis is an antecedent in a large percentage of cases, syphilitic cases resemble the non-syphilitic as regards the histological characters of the lesions, and specific treatment has no effect upon cases with syphilitic history. Hence the broadest conclusion which we can deduce from the fact is that syphilis alters the physiological condition in such a way as to favor the attack and operation of the actual cause of tabes. In this its influence is like that of

measles, or scarlet fever, in leading to the development of tuberculosis; and similar, also, to the action of the influenza bacillus in relation to other pathogenic organisms.

I quote from a recent writer: "When to these facts of clinical experience, we add the evidence of experimental bacteriology, from which we learn, for example, that the presence of staphylococci and streptococci leads to a much more luxuriant growth of the influenza bacillus; and, further, that the latter will grow more rapidly in a medium through which these other organisms have passed, we are strangely attracted to the existence of an analogy in the relation of the syphilitic virus to the toxic agent responsible for locomotor ataxia."⁵

Thus from the many factors attributed as the cause, and the lack of uniformity in the estimation of value of the various supposed etiological agents, it is evident that the pathogenesis is not fully understood, and that in quite a large percentage of cases causes are at work preparing soil for degenerative processes in the spinal cord other than syphilis. Very pertinent and instructive observations and experiments have been made recently, and are now being conducted, with the end in view of determining what these influences are.

In reviewing the fifty-four cases of locomotor ataxia of this paper, surprise was elicited at the large percentage of patients giving a definite history of gastro-intestinal disturbances, such as army diarrhea, gastric and intestinal catarrh, chronic gastritis, chronic constipation, gastropptosis and enteroptosis, and chronic liver troubles, antedating the onset of any of the symptoms of tabes from a few months to several years. Forty-six patients, or 85 per cent. of cases, gave such histories.

Chalmers Watson⁶ obtains conclusions based upon experimental work and clinical study, which are pertinent to the large percentage of gastro-intestinal disorders preceding tabes in this series. Fowls fed on a diet limited to red meat and water, developed symptoms of an acute nature, ataxia, paraplegia, gradually developing unconsciousness and death. Others exhibited no nervous symptoms. In a third class severe attacks occurred of a nature similar to those of the first

group, without, however, involvement of the higher neurones. At the time of the attacks no change was made in the dietetic regime, the only difference being that the animal ate sparingly. A slow recovery occurred on each of these occasions which was probably due to the acquisition of some degree of immunity to the action of the toxic substance or substances responsible for the symptoms.

In two clinical cases of tabes, Dr. Watson has observed initial symptoms, directly referable to the digestive tract, and regards the presence of these gastro-intestinal lesions of primary importance in the production of lowered power of resistance to toxic influences leading to a later development of the spinal cord lesions.

Treatment—Our opinion is that there is no therapeutic agent of as much value in successfully combating the degenerative processes, and in raising the vitality of the diseased parts and of the entire body, as hydrotherapy. Winternitz, after a long experience, gives his results of treatment of 1,000 cases treated by hydrotherapy as being vastly more satisfactory than by any other mode of treatment. The general indication as well as indications for the treatment of special symptoms such as, for example, the cutting pains, are more uniformly and satisfactorily met by scientific applications of hydrotherapy than by medicine.

Extremes in temperature are to be avoided, as well as excessive corporeal exercises. Rest is one of the first and important indications. Electricity and massage give good results.

The suspension treatment as formerly given was, in our judgment, too severe; and while good results were observed in cases, we no longer use the suspension apparatus, but obtain equally satisfactory results by stretching the cord through lengthening the vertebral column, thereby inducing a mild inflammatory reaction—the end sought by the suspension treatment. (In this method, the patient is seated upon a table and the legs are held in an extended and adducted position, and the upper part of the body is then forcibly flexed forward.)

One of the later methods of treatment of tabes has pro-

duced, in our experience, since its adoption, very satisfactory results with patients treated. This consists in the methodical exercises by which the patient is gradually re-taught coördinated movements. The idea was first advanced and recommended by Fraenkel, and has received much commendation by German neurologists. Tabetics have lost in part the power to properly execute and coördinate fine movements. These exercises require the patient to pass from simple to complicated movements. He is made to relearn the control exercised by his eyes and the rest of his sensory apparatus, the proper motor impulses which induce coördinated movements. That it is of much value is without question. A patient left the Sanitarium last week, who, upon his arrival, could neither walk nor stand even with the help of crutches; and who gradually relearned the art of walking so that he could walk nicely with a cane. Another patient, apparently in the third, or paralytic stage, bed-ridden upon arrival, left, walking with a cane and crutch. He continued the exercises and returned a few months ago without the crutch. At the present time he is disabled by a Charcot's joint.

In a word we may say that in the last 24 or 25 patients of this series, who have been given the Fraenkel exercises, very satisfactory results have been obtained. It is not an unusual experience for crutches and canes to be laid aside. I do not give all the credit to this system, by any means; but will say that the treatment of tabes is by no means complete without its careful and persistent use. Each patient is given a type-written schedule of exercises which he follows carefully every day, once or twice, under the direction of an assistant.

We refer again to the chronic gastro-intestinal disturbances of severe character antedating the onset of tabes. Eighty-five per cent. gave a history of such marked disturbances against 42 per cent. who gave a history of syphilis. It is difficult to resist the conclusion that the above chronic disorders of the intestinal tract produced disturbances of nutrition of primary and direct importance; and that the production of toxins and poisons within the alimentary tract, and their absorption and presence in the general circulation would interfere with the nutrition of the cord, and that defec-

tive nutrition accounts simply and adequately for degeneration of the nerve fibers.

One of the first indications, therefore, for treatment in the light of the experimental work upon the effect of a toxic diet upon fowls above quoted and supported by the experience of Dr. Watson, and also by our own cases, would be the treatment of the gastro-intestinal disturbances, and the establishment of a healthy condition of the digestive tract, by giving the patient a proper and nourishing diet. Along this line we with others have observed that gastric and rectal crises, and the lancinating pains of tabes are often concomitant with, and preceded by, a dirty tongue and constipated bowel. Elimination and kidney function are to be increased.

I again quote from the *British Medical Journal*: "I submit that the proper line of investigation is directed to the discovery of the nature and source of the toxic substance at work. At the same time we must study the clinical facts of the disease in the light of the results obtained by experimental bacteriologists and others investigating the all-important subject of immunity. In my opinion the alimentary tract furnishes the chief area of investigation, and in all probability it will be proved to be the original source of the toxemia. In this connection, it is interesting to refer to the experimental work of Adami and others on the different forms of chronic infection, due primarily to the presence in the tissues of bacterial poisons derived from the intestine. The diseases especially investigated by Adami were cirrhosis of the liver, hemachromatosis, and pernicious anemia; and this author as quoted by Putnam and Taylor, suggested that this subinfection would be found to play a definite part in the development of many chronic fibroid conditions."

²Lyons Méd., '95.

³Inter. klin. Rund., Aug. 20, '94.

⁴Alienist and Neurologist, Oct., '96.

⁵British Med. Jour., June 1, 1901.

⁶British Medical Journal, June 1, 1901.

NEW YORK NEUROLOGICAL SOCIETY.

December 3, 1901.

The President, Dr. Joseph Collins, in the chair.

Sarcoma of the Brain.—Dr. M. Allen Starr presented a woman who had been brought to him by her family physician, Dr. Bush, on November 1, 1900. She had been perfectly healthy before this illness, and there was absolutely no history of specific disease. On July 1, 1900, she had been exposed to a very intense heat, and suddenly after this she had had a general convulsion. She had been ill after this for two or three days, and had then recovered, but the convulsion had been repeated two weeks later, and she had had convulsions at intervals of two weeks to a month up to the time of coming to Dr. Starr. During this period she had lost flesh and strength, and had suffered from dizziness and impairment of vision. In October, 1900, the left side of the body had become distinctly weaker. The patient's husband was quite positive that the convulsions were usually limited to, or were much greater on, the left side of the body. The attack began with numbness in the finger and thumb of the left hand; then a closure of the hand occurred, after which the numbness extended up the forearm and arm, and the forearm became flexed and the arm abducted. Lastly, there was shaking. The numbness would extend up to the shoulder, and then the patient would lose consciousness. After that, the leg would become convulsed, and the left side of the face would twitch. On examination Dr. Starr had found no strabismus or apparent paralysis of the face or tongue. The left hand was weaker than the right, as shown by the dynamometer. The left knee-jerk was increased, and there was some numbness in the hand as compared with the other side. The patient had suffered much from headache. When seen a month later, the attacks were more frequent, so that she was having as many as eight in a day, and the headaches were more severe. When seen again in January, the attacks still continued, but were not quite so severe, and she did not lose consciousness. She was losing about half a pound of flesh a week. The difference in the two hands by the dynamometer was represented by 40 and 60. Operation had been repeatedly urged by Dr. Starr, but consent had not been obtained until March 19, 1901, when the patient's condition had become much worse, and there was a beginning optic neuritis. She had been sent to Dr. A. J. McCosh, at the Presbyterian Hospital. It was thought that the lesion was located in the middle third of the motor zone, in the posterior central convolution, and an incision was made in accordance with this view. The operation was done under chloroform; a horse-shoe incision being used. The skull was sawn through and the brain exposed. On lifting up the flap of bone, it was evident that there was some thickening of the dura. The dura was reflected, but was nowhere found to be adherent. Posterior to the fissure of Rolando in the middle third of the posterior central convolution, the brain surface was yellow, and was markedly destitute of blood vessels. It was evident that this discolored mass was a tumor lying upon the brain. It had a thin capsule, but was carefully separated from the brain tissue. In the interior, however, it was not limited by a capsule. On removal, the mass measured one inch antero-posteriorly, and one and a quarter inches vertically, and was one inch thick at its thickest part. There was a smooth external surface, but it was nodular internally.

On section the tumor was hard and not at all vascular. The cavity in which the tumor had lain was lined by compressed convolutions, but at the bottom the tumor invaded the white matter. There was no hemorrhage from the pia, and the pulsation of the brain quickly returned. The patient made a rapid and uninterrupted recovery from the operation. Immediately after the operation hemiplegia of the left face, arm and leg had developed. This had gradually passed off, and there was now nothing left of it except a slight weakness of the hand. The patient had been entirely free from the attacks since the operation, and had been free from headache, and had gained about twenty pounds in weight. At the present time there was an intention tremor and an athetoid movement in the left hand. On the left side tactile sensation, and temperature, pain and muscular senses were all impaired to about the same extent. The woman was not able to determine by sensation the nature of many objects grasped by the left hand—a condition that had not existed before the operation. The knee-jerk had increased upon the left side. The optic neuritis had entirely disappeared. The hemiplegia Dr. Starr ascribed to the tearing of the brain during the operation. The tumor proved to be a sarcoma.

Intense Flushing of the Face.—Dr. Edward D. Fisher presented a man of twenty-two years, who from the age of sixteen had had periodic attacks of intense flushing of the face, sometimes in the form of a distinct red band. It never extends farther down than the chest. He is dull and stupid at the time of the flushing, although he has never lost consciousness or had a distinct epileptic attack. It is not connected with nervousness or emotions, and resembles erythromelalgia. Iodide and bromide of potassium were the remedies that had given the greatest relief. The man's habits were excellent and he is largely in the open air, being a carpenter.

Dr. W. M. Leszynsky said that he had seen two patients with a similar disturbance of the cervical sympathetic as a result of excessive coffee drinking.

Dr. Joseph Collins suggested that the man be given half a drachm of fluid extract of cascara sagrada every night for two weeks, with no other treatment whatever. The affection was evidently a localized vasomotor paresis confined to the cephalic area which had been proven to be in connection with disturbance of the lower intestine. He was not inclined to look upon this as a serious disorder, but rather as originally a toxemia, and secondarily a bad habit.

Dr. Fisher said he had had the patient under his observation for two years, and this explanation did not seem to him to meet the case.

Dr. Joseph Fraenkel said that he had had a patient with a similar condition under observation for several weeks at one time, and Dr. C. L. Dana, who had also seen the patient, had been of the opinion that it was a vasomotor paresis arising from intestinal toxemia. There were also some neurasthenic symptoms directed to the sexual organs.

Dr. Fisher said that he had treated the boy at first on the basis suggested by the last speaker, but further observation had led him to think this was a mistake.

Tumor of Cerebellum Involving the Abducens Nucleus.—Dr. M. G. Schlapp presented a man, twenty-one years of age, who had come to him about six weeks ago. There was no tuberculosis in the family, and he had had no syphilis. About two years ago the patient had first noticed that at times he would become dizzy, and that this would

be followed by headache and vomiting. Shortly after this he had fallen out of a wagon, and since then the left side had grown weaker. Examination of the eye showed choked disk; he had also weakness of the left leg and an ataxic gait. The ataxia was most marked in the left leg; the knee-jerks were absent; the plantar and abdominal reflexes were present; the pupils were equal and reacted to light; there were no sensory disturbances. A week ago he had developed a disturbance of the conjugate movement of the eyes, which had disappeared in two days. The convergent reaction was, however, preserved. Dr. Schlapp had made a diagnosis of a tumor involving the anterior part of the left side of the cerebellum, and in some way affecting the abducens nucleus.

Tumor of the Posterior Central Convolution.—Dr. Schlapp also presented a woman, forty-one years of age, a Bohemian cigar maker. She had enjoyed good health up to five years ago. At that time she had fallen down stairs and had sustained some contusions, including one on the left side of the head. Subsequently the right arm and shoulder had become the seat of twitchings, and she had attacks of loss of speech. After three years twitchings extended from the shoulder to the neck, face and tongue. At first these attacks had occurred once in two weeks, but recently there been many in a day. Latterly she had also suffered from intense shooting pain in this limb. Dr. Schlapp had made a diagnosis of a tumor in the posterior central convolution extending back into the parietal lobe. There was astereognosis and impaired tactile and muscular sensibility on the affected side. Pain and temperature senses were not specially disturbed. Dr. Woolsey had operated upon this patient, and had found a yellowish and somewhat indurated area, about the size of a dollar, in the posterior central convolution. A section of this tissue was exhibited under the microscope, and it showed that the mass removed was not a tumor. Since the operation the strength in the affected hand had improved. She had had four convulsions. The case was presented as having a possible bearing on the question of astereognosis. Apparently the anterior central convolution had not been involved in the growth. It was probable that this convolution was the one having to do with motion, whereas the posterior central convolution had to do chiefly with sensation. In astereognosis the pain and temperature senses are not usually involved, whereas tactile and deep muscular senses are involved. It was known that the fibers of the two latter senses do not decussate in the spinal cord, but end in the columns of Goll and Burdach.

Dr. Leszynsky remarked that if the conjugate deviation were permanent, it would serve to substantiate Dr. Schlapp's contention.

Dr. B. Onuf said that he had seen a recent case exhibiting marked conjugate deviation together with a very decided ptosis on the left side, and on the right side a paresis of the abducens nerve. This deviation had come on after an apoplectic attack of hemiplegia. He did not think such a case could be explained by the involvement of the abducens nucleus; the lesion was evidently in the region of the third nucleus. It was possible that involvement of the posterior longitudinal fasciculus might explain the deviation. In his case the deviation was permanent. The affection of the right auditory nerve would confirm the theory that the abducens was affected.

Multiple Endothelioma of the Dura.—Dr. Hunt showed a specimen obtained from a woman, forty-five years of age, in the Montefiore Hospital. When fifteen years old she had become suddenly deaf. Two years before admission she had begun to suffer from headaches,

and these had persisted. There had been no vertigo. At times her legs would suddenly give way and she would fall. On admission, examination showed that there was a tendency to fall to the right, the right pupil was larger than the left, facial innervation on the right side was deficient, the tongue deviated to the left, the optic nerve showed choked disk, and weakness of the right upper and left lower extremities was very marked. The tendon reflexes were all exaggerated, but this was especially noticeable in the right arm and left leg. The right patellar reflex only was present. At the autopsy over one hundred tumors were found on the dura, aggregated chiefly about the falx, but extending over the convexity on either side. Four of the tumors were larger than the others. At the base of the brain the dura mater was free, but there were two tumors, the size of a pigeon's egg, occupying the interval between the pons and the medulla, and causing a pressure atrophy of the middle peduncles on each side. These tumors were found to be endotheliomata, and the vessels showed considerable calcareous deposit. There was no evidence of malignancy.

Glio-sarcoma of the Right Frontal Lobe.—Dr. Hunt also showed this specimen, taken from a man, forty years of age, who had been brought to Bellevue Hospital because he had fallen in the street. According to friends, he had been acting very peculiarly for the past four months. He was moderately emaciated, and the face was flushed. There was an incomplete left-sided hemiplegia with loss of skin- and tendon-reflexes on the affected side. He was stupid, but could be easily aroused to answer questions. He showed a strong disposition to turn everything into ridicule. There was no conjugate deviation of the eyes, and no aphasia. The pulse was not slow. At the autopsy, the meninges were found to be normal, but the convolutions over the right frontal lobe were flattened and very edematous. On making a section into this lobe, a large tumor had been found growing in the white substance. It had grown outward and downward into the frontal cortex. The tumor proved to be a glio-sarcoma.

Brain Tumors.—Dr. M. Allen Starr opened the discussion on this subject, reporting the following case: The patient was a boy of eleven years, who had come to him after treatment for malaria because of the persistence of morning headaches. These headaches had begun in June, and had gradually increased in severity up to October 8, when Dr. Starr had first seen him. The boy was then dull, spoke very slowly, and would drop asleep if left alone for a very few minutes. The left external rectus was a little weak; there was nystagmus and double optic neuritis. He had suffered from vertigo, and had vomited twice unexpectedly. His gait was quite ataxic, and the left limbs assumed involuntarily abnormal positions. There was no inability to smile, either voluntarily or reflexly. The ataxia of the right leg was very marked, and was associated with a peculiar involuntary position of the hand and arm. There was apparently no anesthesia on the left side, and no hemianopsia. A diagnosis of tumor of the optic thalamus had been made at once because of these forced positions. Dr. Starr said that he had seen such a case in Meynert's clinic in Vienna. Meynert considered these automatic movements and forced positions as a voluntary correction of a delusional state. The question of operation was not entertained. As the boy's father had died of general paresis, the boy was put on mixed treatment, and this had been pushed vigorously for a number of weeks. During this time the boy had grown steadily worse, and had had several collapses

accompanied by a pulse of 40 and rapid breathing. He had been last seen on October 26, and had been able then to understand what was said, but could not talk at all. He was totally paralyzed on the right side, and was able to turn the head only to the middle line. There was apparently no disturbance of sensation on the paralyzed side. The limbs were no longer held in stiff positions, but were relaxed, and the tendon reflexes were abolished. There was no complaint of headache. The pulse was 80, the respirations regular, and there was no fever. He died quietly on the following day. The autopsy revealed the presence of a tumor occupying the optic thalamus on the left side, which was enormously enlarged. It was completely infiltrated by a sarcoma. The tumor had apparently compressed the internal capsule, and had infiltrated all of the tissue of the tegmentum about the corpora quadrigemina. The ventricles were enormously distended with fluid.

Dr. Starr said that this case had led him to look over his private records of brain tumors for the past six years. He had seen in this time 25 cases of brain tumor. Fifteen of the patients were males, and ten females. All ages appeared to be about equally liable. The average duration of the disease had been eleven months, which was much shorter than generally stated. The tumors had been distinctly located in fifteen cases, and it had been possible to operate in four cases. No diagnosis of tumor whatever had been possible in two cases. One of these was a patient whom he had been asked to see because it was purposed to commit him to an asylum. There was a history of chronic alcoholism, some headache and morning vomiting; great mental irritability and imperfect memory. At times he was very violent with his family, though perfectly quiet in the presence of others. In the previous month, on two occasions, he had had sudden attacks of coma lasting about half an hour. Two days after this examination the patient had suddenly died, and the autopsy had revealed a large tumor occupying the left superior parietal convolution. The other case had been seen in consultation with Dr. Biggs. Several physicians had agreed upon the diagnosis of bulbar paralysis. There was no optic neuritis and no headaches. At the autopsy, a small tumor had been found occupying the entire medulla oblongata. No localization had been possible in 8 out of his 25 cases. In 19 an operation had been absolutely impossible, either because of the absence of a diagnosis or because the tumor was inaccessible. The operation had been done in 6 cases, and in 2 the operation had been successful in that the tumor had been found, but one of these patients had died. Therefore there had only been one patient out of 25 who had recovered. In one case, astereognosis had been considered the most important symptom of localization, and consequently the parietal region had been freely exposed, but no tumor had been found. In one case in which the tumor had been in the cerebellum Dr. McCosh had operated. To relieve the distention of the ventricles they were tapped and drained. Sixty ounces of fluid a day had been obtained from the lateral ventricles. The patient had finally died, and an infiltrating tumor of the cerebellum had been found. In another case of cerebellar tumor, the occipital bone had appeared at the operation worm-eaten, and had been the seat of such a profuse hemorrhage that further exploration had been considered inadvisable. In a summary of the cases of brain tumor made by him in 1896 it had been shown that about 7 per cent. of brain tumors were operable, and that of the cases operated upon about one-third recover from the operation. These earlier statistics had been made up from

a large number of cases by different operators, and had not been from his own records alone.

Dr. A. J. McCosh said that the case shown by Dr. Starr was an unusually favorable one for operation because of the accuracy of the diagnosis, the accessibility of the growth, and its freedom from vascularity. Most of the brain tumors that he had seen had usually caused considerable hemorrhage and severe shock. The statistics of these 25 cases seemed to him to come more nearly to the truth than the older ones giving a more favorable percentage.

Dr. Leszynsky said he wished to report the further progress of the case reported by him to the American Neurological Association. The patient had been suffering from symptoms pointing to a lesion in the motor area for nearly two years before coming under observation. The tumor had been found at operation to be an endothelioma of the motor cortex. The operation had been done two years and a half ago, and although the patient had relapsed more or less into a hemiplegic state, he had practically recovered. The localization in this case had been exceedingly accurate. No untoward result had followed the operation, and no additional damage had been done to the brain by the operation. The patient was still engaged as an accountant.

Dr. Onuf reported a case in which the localization had been very satisfactory. The history had begun in July, 1901, with slight jerkings of the shoulder and hip, followed by weakness of the leg and arm. About two months after the onset of the symptoms, the speaker had seen the patient, and although Dr. Onuf suspected brain tumor, he had placed the man on vigorous anti-syphilitic treatment for two weeks. A peculiar feature had been an affection of the abductors, flexors and extensors of the hip, while the extensors of the knee had been less affected, and the muscles of the feet hardly at all. The jerkings had been purely of the Jacksonian type. The case was remarkable because of the absence of headache and local tenderness. The diagnosis had been made—chiefly on the predominance of the affection of the central part of the extremities—of a tumor situated between the shoulder and hip centers, probably quite near the cortex. Immediate operation had been urged, but it had not been done for three weeks. The tumor had been found directly beneath the trephine opening. There was much softening, so that a sound could be introduced for two inches without encountering resistance. The microscope showed the tumor to be a gliosarcoma. It had been impossible to remove all of the tumor.

Dr. Schlapp said that in his specimen there was an arterio-sclerosis with an increase of glial cells and the deposition of calcareous material. He had not made the diagnosis of tumor involving the abducens nucleus entirely on the conjugate deviation, but the fact that the left side of the face had been weaker than the right had seemed to confirm the view.

Dr. Joseph Fraenkel said that he had seen a few days ago a boy of about eighteen, who claimed to have been well until struck in the back of the head by a swinging door. After this he had developed paralysis of the right third nerve, followed soon afterward by hemiplegia. He had been operated upon, and the base of the brain searched for a cyst, but none had been found. He had then been admitted to the Montefiore Hospital. There was paralysis of the left upper extremity and an enormous contracture, with less marked paralysis of the left lower extremity and some slight optic atrophy. Subsequently, inquiry had elicited the fact that his companions had noticed long before the accident that the boy showed a peculiar tenden-

cy to laughter. Dr. Fraenkel recalled a case which had exhibited similar automatic movements to those reported in Dr. Starr's case. He had come to the conclusion that the tonus of the muscles was the most important factor in connection with the production of reflexes. He would like to know how absence of the reflexes could be explained in Dr. Starr's case.

Dr. Joseph Collins exhibited a photograph of an enormous tumor of the frontal convolution, which had been diagnosticated by an eminent neurologist and by himself as a tumor of the pons. His experience had gone to show that brain tumors are far more inoperable than was generally believed. Statistics had seemed to show that about seven to ten per cent. were operable, but when one came to sift these it was found that about three or four per cent. were operable. In his own experience but one case had been successfully operated upon, although the operation had been many times essayed. Dr. Bramwell, of Edinburgh, had contended that his own very large experience had utterly failed to confirm the statistics given by others regarding the operability of brain tumors.

Dr. Starr closed the discussion. He did not feel like subscribing to the statement of the last speaker concerning the almost universal inoperability of brain tumors, for, in his own series of 25 two had been distinctly localizable and operable. Accidental hemorrhage had caused death in one of these cases, and the other patient ought to live the usual length of life with only slight disability. It was true a great many cases of brain tumor successfully operated upon were reported, while many unsuccessful ones are not reported. Dr. Bramwell's statements were not borne out by his experience, for Dr. Bramwell had published 61 cases of brain tumor that had occurred in his own practice, and of this number there had been at least 7 that could have been successfully operated upon. Discouraging as the statistics were, it was right to operate upon every case in which the tumor could be distinctly localized and was accessible. He believed if in the case presented by him at this meeting the operation had been consented to when first advised, the patient would have recovered without any disability. The conjugate deviation referred to by Dr. Schlapp might occur not only from a lesion of the sixth nerve nucleus but from anything which interferes with the posterior longitudinal fasciculus between the sixth and third nerve nucleus.

PHILADELPHIA NEUROLOGICAL SOCIETY.

January 28, 1902.

The Vice-president, Dr. Charles S. Potts, in the chair.

A Case of Paralysis of the Face, Upper and Lower Limbs on the Right Side; and of the Tongue and Muscles of Mastication on the Left Side.—This case was presented by Dr. Wm. G. Spiller. Paralysis of one of the ocular muscles was also present, but Dr. W. C. Posey had had difficulty in determining which muscle was paralyzed. The case was diagnosticated as one of multiple syphilitic lesions.

Dr. Edward A. Shumway said that he had made a brief examination of the patient and found that she had diplopia which increased towards the left, and increased markedly when the patient looked up and to the left. This indicated interference with the left superior rectus or the right inferior oblique. The patient's answers were uncertain, but there was apparently a paresis of the right inferior oblique.

A Case of Superior Tabes with Symptoms of Paretic Dementia.—This case was presented by Dr. Max H. Bochroch.

Dr. J. K. Mitchell said that tabes limited, or almost limited to the arms was very little mentioned in the text-books, Erb, Leylen, Vulpien and Hammond barely referring to it or omitting it altogether.

Dr. Weir Mitchell in 1888 reported the first case observed in the United States, the speaker the second one in 1894. It was curious that Dr. Bochroch's case and both these others should be in men making much use of their arms in their trades, as carpenters and masons.

In the speaker's case the trouble began in the right forearm and for a year or more was limited to that part. After six years the ataxia and impairment of sensation which were very great were still strictly limited to the forearms. There were some subjective sensations of discomfort in the feet. The gait was good, but the knee-jerk was totally absent. He walked without difficulty and had no lancinating pains except in the arms. When he was last heard of, three years later, the disease had progressed no further.

Dr. J. Madison Taylor referred to a case of Dr. Weir Mitchell which he had seen, one which had passed through the hands of a celebrated neurologist in London without the disease being recognized. The patient consulted Dr. S. Weir Mitchell for another matter. The tabes in the lower limbs was very slight. The ataxia in the arms was well marked. There were lancinating pains in the arms. The man had used his arms largely in out-door sports. He had first noticed diminution in his ability to use firearms. The general health was thoroughly good. Improvement set in in the arms and the legs grew worse. This was not the case reported by Dr. John K. Mitchell, but a second one occurring in his father's practice.

Dr. William G. Spiller said that Leyden had spoken of cervical tabes in 1876. Dr. Spiller referred to a case, the specimens from which had been sent to him about one year ago by Dr. S. S. Cohen. Symptoms suggesting syringomyelia had been present. It was a

case of superior and bulbar tabes, and was reported at the meeting of the American Neurological Association last Spring.¹ A number of clinical cases of superior tabes have been reported, but very few (probably not more than eight or nine), with necropsy. The case which he had studied was distinctly one of superior tabes associated with bulbar tabes. The lower cervical and the upper thoracic roots were degenerated. Strictly speaking, the term cervical tabes is a misnomer. The disease is not confined to the cervical cord, but in all the cases with necropsy studied the upper part of the thoracic cord has been involved. In the case reported by Drs. Cohen and Spiller, the lumbar cord was not diseased. The patient had been a carpenter, and therefore had used his upper limbs more than his lower.

Dr. F. S. Pearce suggested, in regard to etiology, the possibility that the primary cause in some cases of superior tabes was a latent meningitis. Many cases with symptoms of amyotrophic lateral sclerosis are probably of this character.

Dr. Alfred Gordon referred to the relations between tabes and paresis. A study of the literature shows that the association of paresis and tabes is more common than is generally supposed. The principal objection of those who think that tabes and paresis are not related, is the fact that tabes to arrive at its full development requires ten to twenty years, while paresis requires only a few years. A reference to the literature shows that this is not so. Barthelemy in 1878 reported a number of cases. Fournier has also collected five hundred cases of tabes, and has followed up a great many of them. In a large proportion of these cases, paresis developed after the onset of tabes.

Ocular symptoms are found in both diseases. The motor incoördination of tabes is analogous with incoördination of mentality in paresis. The etiology is also analogous. Paresis and tabes are often found in different members of the same family. The progressive character and the impossibility of arrest are analogous in the two diseases. An important fact is that those who have followed up their cases have always witnessed symptoms belonging to paresis. In the cases of incipient tabes reported by Westphal, Strümpell and Flechsig, symptoms of paresis developed very rapidly.

With regard to the knee-jerk in superior tabes, Westphal contends that if in superior tabes the knee-jerk disappears, it shows that the lumbar cord is involved. That, however, is not always the case. In one case in which the knee-jerks were absent, the autopsy showed no involvement of the lumbar cord. Symptoms of paresis were also present in this case.

Dr. Gordon referred to a case reported by Raymond in which a diagnosis of tabes had been made. Shortly before death cerebral symptoms developed, and the autopsy showed that it was a case of paresis.

Dr. Charles K. Mills said that he had come to the conclusion that the views of Raymond are correct that tabes and general paresis in their pure forms are essentially the same, that is to say, pathologically and patogenetically. The subject is one which requires somewhat elaborate discussion. He believed that the trend of opinion is in the direction referred to. He had, however, seen cases in which after many years of tabes, the patients became demented, but the dementia was not of the tabetic parietic type. In almost all cases of tabes of long duration, some cerebral symptoms and lesions can be found; and it is rare to find general paresis in which some spinal symptoms and lesions do not exist. It is the localization and

¹American Journal of the Medical Sciences, August, 1901.

the diffusion of the lesions which give us the clinical types—spinal in the one case, cerebral in another, and cerebro-spinal in a third.

Dr. William Pickett said the question of paresis in Dr. Bochrach's case was of interest. While cases of paresis supervening upon tabes dorsalis are sometimes spoken of as *ascending* paresis, this is not strictly correct, as the disease does not progress from tabes dorsalis to "tabes of the brain" by a continuity of lesion. If it did, we might expect these cases of cervical tabes to develop into paresis more frequently. Out of 149 cases of paresis which he had recently studied there were 5 of the ascending type. These five were all long-standing cases of tabes of the lumbo-thoracic region, and in 4 of them it was the classic form of paresis which developed, the fifth being a simple demented case. He had also seen dementia develop in long-standing cases of tabes, but this was the simple secondary dementia which we see in various forms of cord disease.

He also referred to an instance of paranoia in a typical case of tabes of some fifteen years' duration, with Charcot's joints. The man had hallucinations of hearing, persecutory delusions and considerable exaltation.

In Dr. Bochrach's case the prognosis would be very different according to whether the mental signs are referred to incipient paresis or to simple secondary dementia.

Dr. Max H. Bochrach remarked that in his case there were some of the classical symptoms of paresis, such as fibrillary contractions of the tongue and muscles of the face, hesitation in speech and slow mentality. These symptoms coming on during a short period of time, eighteen months, inclined him to regard the case as one of paresis, with beginning tabes.

A Case of Progressive Spinal Muscular Atrophy in which the Atrophy Began in the Extensors of the Hand and Fingers.—This case was shown by Dr. C. S. Potts.

Dr. Charles K. Mills said that such cases as this, although of a common type, were well worth presenting, as they caused us to be guarded with regard to positive opinions about the etiology of cases somewhat similar. This man had some features of lead paralysis. He retained the use of the supinator on one side, while the muscles supplied by the posterior interosseous were largely wasted and weakened. At one time, he had very little atrophy of the muscles of the hand. At some period in its evolution a case of chronic degenerative disease may present a symptom-picture closely resembling that found in toxic disease.

A Case of Facial Tic in which each Series of Contraction was followed by Complete Paralysis in the Facial and Hypoglossal Distribution on the Same Side.—This case was reported by Dr. A. P. Francine and Dr. D. J. McCarthy. Dr. D. J. McCarthy said that the primary attack was probably hysterical, but following that the clonic convulsions of the face developed. He had seen the patient in an attack which came on with clonic movements of the right side of the face lasting from half a minute to one minute, and was followed by complete paralysis of the right side of the face and tongue, continuing from two to five minutes. This paralysis disappeared gradually, leaving some weakness. The ocular symptoms were negative, the reflexes were normal. Some hyperesthesia was present on the right side. He regarded the case as organic, with a cortical lesion, or as one with involvement of the seventh and twelfth nerves; more probably however as one of cortical lesion.

Dr. Charles K. Mills remarked that the history would indicate that the case was one of small cortical lesion in the facial area, as

shown by the recurrence of the facial spasm, and the clonic type of the spasm, followed by paralysis (Hughlings Jackson exhaustion paralysis). This form of paralysis is usually due to lesion which does not entirely destroy the cortex, but by irritation causes a severe discharge from certain cortical areas. The hypesthesia might be due to a similar discharge through the sensory cortical neurones which send their processes to the motor cortex, or it might be a hysterical epiphenomenon. He did not lay any stress on the absence of optic neuritis in cases of small tumors of the cortex.

Dr. F. S. Pearce referred to a case which had been under his care, in which there were epileptic seizures involving the left side, particularly the arm, and these were followed by paralysis. The man probably had tuberculosis of the lung although no bacilli were found. There was no optic neuritis. Operation over the right motor cortex was advised, but the patient went home and died. No autopsy was made, but the speaker thought that there probably was a tuberculous abscess.

Dr. William G. Spiller thought that the diagnosis of a small cortical lesion was probably correct. It was noteworthy that there was no disturbance of speech. If in this case there were a basal lesion, it was strange that only the seventh and twelfth nerves were affected. While this was possible in meningitis, he considered it more likely that the lesion was cortical.

A Case of Poliomyelitis with Increased Knee-jerk. This case was shown by Dr. F. Savary Pearce. Dr. Charles K. Mills considered this to be a case of poliomyelitis. The explanation would be that the segment of the cord that has to do with the knee-reflexes is unaffected. He thought from his examination of the child that the quadriceps muscles were not in the same atrophied condition as those below the knee. He had seen a number of cases of poliomyelitis with retained knee-jerk.

Dr. A. A. Eshner stated that this patient had been at the Orthopedic Hospital a number of times, and it was recorded that the knee-jerks were "active." The records of this institution show that in many cases of poliomyelitis the knee-jerks are preserved, and in a few they are noted as pronounced. While exaggeration of the knee-jerk in cases of poliomyelitis is uncommon, its preservation is by no means rare.

Carcinoma of the Spine with Autopsy.—This paper was read by Dr. A. Buckley.

Dr. William G. Spiller said he had recently had a similar case with paraplegia, considerable pain and loss of the reflexes. Carcinoma of the vertebræ secondary to carcinoma of the breast was found. Within a few weeks he had seen another similar case of tumor of the breast with symptoms of compression of the cord, due to secondary growth in the vertebræ.

Dr. Wharton Sinkler said he had seen a case of carcinoma of the cord following carcinoma of the breast. The cord symptoms appeared about three months after excision of the breast. The lesion was evidently high in the cord as paralysis of the arms as well as of the legs was an early symptom. The patient lived three months after the development of the cord symptoms. No autopsy was obtained.

Dr. A. C. Buckley said that throughout the lumbar cord there was a marked increase in the amount of neuroglia. The nerve roots did not stain as other nerve roots. There was round-cell infiltration among the nerve fibers. The ganglion cells of the gray matter of the lumbar cord were very much affected.

Periscope.

Monatschrift für Psychiatrie und Neurologie.

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1. Symptomatology of Hemiplegia. H. OPPENHEIMER.
2. The Schleife, and the Centripetal Spinal Fibers from Deiters' Nucleus, the Quadrigemina, and the Substantia Reticularis. M. PROBST.
3. (Continued article.)
4. (Continued article.)
5. (Continued article.)

1. *Symptomatology of Hemiplegia.*—Babinski, of Paris, recently described a triad of symptoms, which he considered pathognomic of organic, as compared with hysterical, hemiplegias. One of these is the manner of rising from the recumbent position. The hemiplegic, in so doing, flexes the paralyzed thigh on the trunk, and elevates the heel two or three feet from the bed; the functional paralytic does not. Oppenheimer claims priority in the description of this symptom. He further states that it accompanies all forms of spastic paralysis of the lower limb, and not hemiplegias alone. In case there be a hemiataxia in addition to the hemiplegia, it is betrayed by the grotesque, incoördinated manner in which the symptom produces itself.

2. *Schleife and Centripetal Spinal Fibers.*—The author's researches, which are based upon the study of degenerated tracts, establish the fact that the nucleus of Deiters is an intermediate station between the cord and the cerebellum, just as the nucleus ruber is between the quadrigemina and the cortex. Fibers arise in the cord, pass upwards in the anterior and antero-lateral columns, and end in Deiters' nucleus. These fibers are clearly demonstrated by the experimental method of degeneration, the tracts being stained according to Marchi. Further, after hemisections of the cervical cord, Deiters' nucleus is found to be atrophied. In addition to the two sets of bundles above mentioned, there is a third, which occupies the anterior area in the mid-brain. Collaterals pass from this fasciculus to the large ganglion cells of the substantia reticularis, and to the cells of Deiters' nucleus.
R. WEIL (New York).

Archiv. f. Psychiatrie.

(Bd. 35, 1901, No. 1.)

1. The Fornix and Corpus Mamillare. L. EDINGER and A. WALLENBERG.
2. The Course of the Cortico-thalamic Optical Fibers, their Terminations in the Tween and Midbrain, and the Visual Association and Commissural Tracts. M. PROBST.
3. A Case of Combined Systemic Disease of the Spinal Cord with Mild Anemia. M. RHEINOLDT.
4. A Tumor of the Spinal Cord with Operation. Remarks on the Brown-Séquard Paralysis and the Course of the Sensory Tracts in the Cord. A. BOETTIGER.

5. A Contribution to the Frankfurter Ergotismus Epidemic and Its Permanent Consequences. YAHRMÄRKER.
6. The Neuroglia Findings in the Brains of Thirty Cases of Psychoses. J. ELMIGER.
7. Alterations in the Blood Vessels in Miliary Hemorrhages of the Brain. L. W. WEBER.
8. Encephalopathia Infantilis Epileptica. HUGO LUKÁCS.
9. The Propriety of Divorce in Communicated Insanity (Folie à deux). ERNST KALMUS.
10. Spinal Cord Changes in Diphtheria. S. UCHIDA.
11. The Testing of the Sense of Hearing in Aphasia. TREITEL.

1. *The Fornix and Corpus Mamillare*.—The authors limit the conception of the fornix to those fibers arising in the cornu ammonis and passing by way of the fimbria to the corpus mamillare, and include certain radiations arising in the limbic lobe which join the fornix anteriorly beneath the corpus callosum. Other tracts, as the tractus cortico-habenularis, tractus strio-mamillaris and the *Scheidewandbündel* are excluded from the fornix proper. They divide the corpus mamillare into a large medial and a smaller lateral nucleus. Vicq. d'Azyr's bundle is in relation with the median nucleus, while the pedunculus corporis mamillaris arises in the lateral nucleus. Edinger obtained for examination the brains of two dogs which had been operated on by Goltz. From dog No. 1, the entire brain mantle had been extirpated, including the corpus collosum and the psalterium. The animal had survived the operation one year, so the anterior pillars of the fornix were totally degenerated. As the anterior thalamic nuclei were uninjured, both tracti thalamus-mamillares were intact. The corpora mamillaria were uninjured. The medial ganglia of the corpora albicantia in their anterior two-thirds were found atrophic. The posterior one-third was normal. In the anterior portion of the medial nucleus, its medullary mantle and the pedunculus corporis mamillaris were normal.

Dog No. 2 survived the extirpation of both frontal lobes about six months. Post-mortem were found, besides an extensive internal hydrocephalus, a traumatic softening of the left optic thalamus in its anterior portion with degeneration of Vicq. d'Azyr's tract; the fornix on the left was also degenerated. On the right both of these structures were uninjured. The left corpus mamillare was reduced to one-third its normal size. This atrophy was most marked in the anterior two-thirds of the medial ganglion, only slightly present in the lateral ganglion. The medullary capsule was thinner than normal. From the unaffected corpus mamillare fibers crossed the middle line, which decussation was absent on the atrophic side. The pedunculus corporis mamillaris was unchanged.

Edinger concludes that the fornices terminate almost wholly in the medial ganglia, especially its antero-lateral and dorsal portion. A few fibers pass in the von Gudden's fornix decussation to the opposite side. That the Vicq. d'Azyr's bundle terminates in the medial nucleus ventrally, some fibers, however, passing to strengthen the medullary capsule. The nucleus lateralis stands in intimate relation to the medullary capsule and the pedunculus corporis mamillaris.

Dr. Wallenberg studied the course of the fibers in the fornix in rabbits and mice. Either the cornu ammonis or the fornix at the bend of the anterior commissure was interrupted, by passing a tenatome into the brain. He found that no degeneration could be traced beyond the corpus mamillaris. Degenerations could be traced to the gray matter of the third ventricle (centralen Hohlegrau) and

the tuber cinereum. No degenerations could be traced from one cornu ammonis to the fornix of the opposite side. In house rabbits and white mice the fornix terminates in the ventro-medial portion of the lateral ganglion and in the lateral portion of the medial ganglion. In giant rabbits (*riesen-Kaninchen*) the fornix decussates to the corpus mamillare of the opposite side. That the same tract should have a widely different termination in different species the author considers a new and most important anatomical point.

2. *On the Cortico-thalamic Optical Fibers.*—The writer reviews the experiments of von Monakow, who examined the brains of young animals several months after unilateral extirpations of the visual cortical center. In rabbits and cats, von Monakow demonstrated a degeneration of the medullary mantle of the external geniculate body, of the cells and fibers of the pulvinar and the brachium of the anterior corpus quadrigeminum; the optic tracts were normal. A dog's brain after extirpation of both cortical visual centers showed degenerations on both sides in the pulvinar, medullary mantle of the external geniculate bodies, the anterior corpora quadrigemina and their brachia and the dorsal portion of the optic radiations of Gratiolet. Probst further conducted a large series of experiments on cats. The caudal portions of the first, second and third convolutions (occipital lobe) were destroyed partially or totally on one side. Serial sections were made of the entire brain, which had been treated by the Marchi method; the animals were killed from two to three weeks after the operation. By this method the degenerations from the cortex to the primary optical centers were obtained alone, and were not vitiated by retrograde degeneration of the centripetal thalamo-cortical fibers, as would occur in the atrophy experiments utilized in the now classical researches of von Gudden and von Monakow. Probst found degenerated the dorsal portion of the medial optic radiations of Gratiolet. The ventral portion of the same is represented by centripetal thalamo-cortical fibers (demonstrated by previous experiments). Degenerated were also the superior medullary layer of the anterior corpus quadrigeminum and the inner layer of the stratum zonale of the same. At the posterior portion of the anterior corpora quadrigemina, near the sulcus transversus, degeneration could be traced to the superior medullary layer of the opposite side, forming a commissure. This decussation has long been recognized anatomically, but this proves its commissural character in relation to the optical centers. Furthermore, degenerations in the dorsal and medial portion of the medullary fibers passing to the external geniculate body, slight degeneration in the thalamic stratum zonale coursing in the direction of the ganglion habenulae. Degenerations are traced across the corpus callosum in its posterior and dorsal portion (forceps minor) to the occipital cortex of the opposite hemisphere. Slight degenerations are traced anteriorly in the fasciculus sub-callosus. The same result was reached in all the experiments.

From previous studies of the brain by enucleation of an eye the writer concludes that the retina on one side communicates with the external geniculate body, the pulvinar and anterior corpus quadrigeminum on both sides; hence a bilateral representation in the primary optical centers, with the exception of the small commissure described alone as unilateral. In these numerous researches no direct degenerations could be traced from the central to the peripheral neurone or from the peripheral to the central. The terminations of cortical and retinal fibers in the anterior corpora quadrigemina near

the cells of origin of the *Vierhügel-Vorderstrangbahn* suggests the possible cause of reflex action. Probst believes with von Monakow that the primary and secondary optical neurones are connected by intercallary cells (Schaltzellen).

3. *Systemic Disease of the Spinal Cord and Anemia*.—A man aged twenty-eight years, after a prolonged exposure to cold, noticed a stiffness in the legs, which disappeared in three weeks. For one year his health was as usual; the previous stiffness then returned accompanied by ataxia, rapidly becoming paraplegia with bladder and rectal symptoms, loss of the tendon reflexes and decubitus. Pupils and skin reflexes normal, no pains, no paresthesia, no sensory disturbances except dulness of the pain sense shortly before death, which occurred eighteen months after the first exposure. Examination of the cord revealed a degeneration of the direct and crossed pyramidal tracts, increasing from above downwards; of the direct cerebellar tract, the cells and finer medial fibers of Clarke's columns; of the columns of Goll and Burdach, sparing, however, the posterior roots, Lissauer's marginal zone and the posterior root zone. Also a degeneration of the septo-marginal tract (dorso-mediales Bündel) in the lumbo-sacral region. The above sclerosis was strictly confined to the fiber systems. There was a moderate infiltration of the meninges and perivascular spaces with round cells; lymph spaces dilated from small hemorrhages of recent origin in the older areas of sclerosis. The blood vessels were thickened, but not obliterated. Because of the slight interstitial reversion with sclerosis but non-obstruction of the blood vessels, Dr. Rheinboldt would seek the cause in a toxemia, as suggested by Dana and Russel.

4. *Tumor of the Spinal Cord*.—The clinical notes are as follows: Three years ago a woman aged sixty-five years was seized with burning pains in the sole of the right foot, a swelling of the knee and sharp pains in the hip, also on the same side. A weakness in the right leg and very sharp stabbing pains in the left leg soon followed, which grew slowly but progressively worse. The examination showed an almost complete paralysis of the right leg, with exaggeration of the patellar reflex, ankle-clonus and Babinski phenomenon, and but trifling spasticity. On the left leg there was complete loss of the sense of pain and temperature extending upwards to Poupart's ligament anteriorly and the origin of the gluteus maximus posteriorly. The tactile sense was normal. The plantar reflex on the left was wanting, while the tendon reflexes were normal. On the right side corresponding to the navel anteriorly and the first lumbar spine posteriorly, and extending downwards the breadth of a hand, was an area of hypalgesia and diminished temperature sense. Within this was a narrow band of anesthesia. The muscle sense was lost in the right side. There was no hyperesthesia. Slight visual symptoms. The electrical reactions of the muscles of the legs and abdomen were normal. The abdominal walls were relaxed, their reflexes were absent. As the course of the disease was slow and progressive, a tumor was thought probable. Owing to its unilateral character and absence of irritative symptoms (no hyperesthesia, only moderate spasticity in right lower extremities, it was thought to be sub-dural, compressing and not infiltrating the cord. The analgesia pointed to the twelfth dorsal segment, but as in unilateral lesions this is uncertain (Sherrington and Bruns) the writer followed the motor indication and placed the lesion in the eighth dorsal segment, that is above the innervation of the abdominal muscles, which electrically were normal. The operation revealed a sub-dural psammoma compressing

the eighth dorsal segment; after its removal a della was left in the postero-lateral surface of the cord, but the posterior roots were not implicated. Hence the pains in the left leg, which were very violent, were of central and not "root" origin as was thought. The absence of tactile anesthesia in Brown-Séquard paralysis is not uncommon, and is attributed to a double representation in the cord. The author concludes that the fibers conveying sensations of pain pass through four segments of the gray matter before their decussation. Following the operation a very slight improvement in the motor and sensory symptoms is recorded.

5. *The Frankenburger Ergotismus*.—Dr. Yahrmärker presents twenty cases of poisoning from bread made with ergot of rye, observed by Prof. Mannkopf twenty years ago, during the epidemic which infected the villages of Frankenburg; also the present conditions of these patients still surviving, which were studied by Prof. Tuczek at the same time. In the first group twelve were men and eight women, all under twenty years of age. In some the symptoms appeared immediately, in others weeks or even months elapsed before the onset. The first and almost constant symptom was a prickling sensation in the limbs and extremities (Kriebel-krankheit) with no accompanying sensory disturbance. To this were added stiffness and ataxia of the limbs, great weakness, somnolence, transient dementia and in fifteen cases epilepsy. Other symptoms were headache, vertigo, tinnitus, muscæ volitantes, choreiform movements, pains in the arms and legs, muscular spasms, loss of the control of the sphincters. In a few cases livid blotches appeared on the skin, ulcerations and vesicles with pustular contents. Hence the convulsive form predominated; the gangrenous form was only indicated.

One autopsy is reported in which the vessels of the cord were found much injected with hemorrhages, recent, and old, surrounding them; granule cells and a focus of softening in the lumbar region. Of those reported by Prof. Tuczek, who still survive, some of the following conditions had persisted, although many had made a complete recovery. Knee-jerks absent on one or both sides, or very feeble; easily fatigued, very forgetful, slightly demented, imbecility, cramps in the legs, hallucinations, delusions, epilepsy. The descendants show no tendency to nervous affections.

6. *Neuroglia in Psychoses*.—The first and second frontal, middle Rolandic and the occipital were the regions selected for examination by D. J. Elmiger. The Weigert glia stain, as published in 1895, was the method used. In two cases of paranoia, two of melancholia and one of chronic confusional insanity, no changes were found. Five cases of epilepsy were studied in all of which the glia distribution was normal, excepting one case with dementia; here the astrocytes were increased and aggregated into glia nests, forming isolated foci. Six cases of senile dementia and one of senile melancholia showed a thickening of the marginal glia, a perivascular gliosis, astrocytes and amyloid bodies. In seven cases of dementia paralytica, an enormous increase of the marginal glia and perivascular glia. The granulations in the ependyma also consisted of glia. In this group the changes were most pronounced. In all excepting the epilepsy with dementia the glia increase was diffuse. Where the glia was augmented there was a corresponding atrophy of the brain.

7. *Miliary Hemorrhages of the Brain*.—Dr. L. W. Weber gives the following clinical study. A laborer, aged sixty-four years, was admitted to the asylum with the history of a severe fall on the occiput sev-

eral months before. He had been excessive in the use of alcohol for years, denied lues, no neuropathic tendency was elicitable. Since the injury he had been subject to headaches and vertigo, transitory hallucinations, paraphasia and weakness on the left side, on which the tendon reflexes were exaggerated. While under observation he had a series of left-sided convulsions with unconsciousness. Post-mortem the meninges were found normal, the vessels at the base stiff. The surface of the brain was dotted with circumscribed hemorrhages, varying in size from a pin's head to a cherry. They were particularly numerous posteriorly. On section the same sharply defined hemorrhagic foci were seen in the cortex and adjacent white matter. Teased preparations of the cortical vessels disclosed no miliary aneurysms. The vessels of the cortex were sclerosed, thickened, hyaline in appearance. Where the process is advanced, veins cannot be differentiated from arteries; many vessels are obliterated, the small branches of which respond to the specific stains for iron; also observed in many ganglion cells (siderosis). The hyaline vessels show a peculiar lamellated structure, in some of which the cellular elements are seen coursing between these several layers, causing rupture. Many of the perivascular lymph-spaces are filled with a homogeneous substance in which all bodies may be discerned, containing fat and pigment granules. Some vessels show a peculiarity with van Gieson's method, the outer layers staining red, the inner yellow, attributed to cellular inhibition of iron. There was a marked perivascular gliosis. The writer classes the case as a senile dementia, receiving its peculiar features from the alcoholic element, although recognising certain points as described by Binswanger and Alzheimer. Colloid degeneration was excluded because of staining tests. The above hyaline sclerosis remained undissolved by the action of acids and alkalis, and unstained by carmine and Weigert's fibrin stain. The amyloid reaction was absent.

8. *Encephalopathia Infantilis Epileptica*.—In the epilepsy of children Dr. H. Lukács refers to the great rareness of genuine epilepsy, the disorder being usually purely symptomatic and subordinate to an underlying brain condition (encephalopathia), associated with which some of the following organic changes are found: atrophy, sclerosis, degeneration, porencephaly and hypoplasia. As causative factors are mentioned: trauma occurring before, during or after birth, intoxications and infections (also intra-uterine), meningitis, encephalitis (Strümpell), rickets (Gowers). Clinically most cases with epilepsy present motor symptoms: hemiplegia, monoplegia, paraplegia, atetosis. Psychically the following are noted: mental restlessness, impulsive acts, constant change of mood, destructive, passionate, cruel with animals. The convulsions are often unilateral (Jacksonian), and if general, usually begin on one side; coma and unconsciousness are frequent. In support of the thought that stigmata in these cases are often acquired, the experiments of Lemoine, who produced asymmetry of the facial bones by injuring the brain in animals, are mentioned. In the majority of the cases an hereditary taint is not demonstrable. The most significant sign of degeneration, whether congenital or acquired, is considered a diminution of the power of inhibition, the easier elicibility of reflex action. For the above varied and long-recognized group of cases the comprehensive and formidable title is suggested of "*Encephalopathia Infantilis Epileptica*."

9. *Divorce in Communicated Insanity*.—Dr. E. Kalmus reports the following case. The patient, Mrs. M., of poor heredity and very questionable previous life, was married to her present husband in

1884. She was of a domineering and commanding nature, of which he was the reverse, being feeble and vacillating in character, with a worse heredity than the wife, having two sisters insane, one of whose children was imbecile. In April, 1896, the wife was admitted to the asylum, the husband having been committed six months previously; she had hallucinations of all the special senses with strange delusions of persecution, mostly of a sexual nature. The insane systems of herself and husband were intimately intertwined and were never inimical to one another, but rather of a protective character. The man was discharged in November, 1897, while the wife still shows no amelioration in her symptoms. It was noted that whenever husband and wife had met in the asylum, which happened at rare intervals, the man's symptoms were always aggravated. A female patient with whom Mrs. M. had daily intercourse, a mild paranoiac, became much worse under her influence, her delusions taking the same violent character as Mrs. M's. After separation she soon returned to her former state. The fact that Mrs. M's son had also presented transitory symptoms of hallucinations of hearing is also of interest. The writer believes this to be a case of induced insanity (*folie communiquée, inducirtes Irresinn*), the strong paranoiac system of Mrs. M. finding a favorable site for implantation and development in Mr. M. As is usual in such cases the source of the evil remains permanently affected, the victim recovering. Mr. M. was allowed a divorce.

10. *Spinal Cord Changes in Diphtheria.*—Dr. S. Utchida refers briefly to the pathological changes in the nervous system hitherto described: congestion, hemorrhagic softening and thrombosis; degeneration of the cells of the anterior horns with or without degeneration of the myelin in the peripheral nerves; degenerations in the peripheral nerves alone. The changes described by Katz (1897) with the Marchi method receive especial attention. They consisted of an indistinctness of cell body and nucleus, fine black granules in the cell body, some of which were cleft or in fragments. Many cells were normal. In the white matter numerous minute, semilunar, black masses were seen on the surface of section, either in direct apposition with the axis cylinder or between the fibers in the interstitial structures. On longitudinal sections the sickle-shaped changes in the nerve fibers were of short extent only, the fiber above and below presenting a normal appearance (*fleckiges Aussehen*). The same change was noted in the peripheral nerves and most pronounced in the anterior and posterior root fibers. Katz based his observations on the study of three cases with moderate paralysis; medulla, cord and nerves of all were examined by the Marchi method. Dr. Utchida examined the cords of twelve cases with diphtheria without paralysis, and one of diphtheria with paralysis. In seven of these cases the minor spinal changes described by Katz were found with the exception of the cleft and fragmented cells. In two cases the changes were present, but slight, and in two cases were absent. In addition six cases without diphtheria were examined; in two the black granules in the cells and partially degenerated segments in the nerve fibers were noted; in two, present but trifling, and wanting in two. Hence Dr. Utchida concludes that this condition is in no wise peculiar to diphtheria, but is normal, or at least found in diverse pathological states, that the particles staining black with the osmium (Müller) mixture is not a degenerative, but an infiltrative product (fat). The variability in this change after perusing the clinical records of these cases, he believes is explained by the age. This infiltration fat in the

nervous system is not found until about the fourth year. This peculiarity of the ganglion cells had been noted previously by Rosin (1895).

II. *Hearing in Aphasia*.—Dr. Treitel mentions the importance of differentiating the cerebral from the labyrinthine form of deafness; also the great rarity of the absolute loss of the perception of sound or speech in the above types. Prof. Bezold demonstrated the important fact that the range for vocal audition was from B of the third octave to G of the fourth octave. He devised a continuous series of tuning forks including the various tones of this range. By this means he showed conclusively that many deaf-mutes, who in general could not hear, perceived a number of these tones. Dr. Treitel concludes by presenting a case as demonstration, which will not bear abstraction.

J. R. HUNT (New York).

Revue Neurologique.

(1902. Vol. 10, No. 1, January 15.)

1. Two Cases of Syringomyelia. E. HUET and R. CESTAN.
2. Sub-Cortical Motor Aphasia. LADAME.
3. Mental Confusion and Cerebellar Syndromes during Uremia. Effects of Lumbar Puncture. G. SCHERR.

1. *Two Cases of Syringomyelia*.—The authors sum up the story of their two patients. Little by little, without fever but rapidly, a muscular atrophy of a myelopathic character took place, associated with sensory and motor troubles. These sensory motor troubles could be caused only by a syringomyelia; this diagnosis, indeed, was given without discussion for the first patient. There was for its proof the complete dissociation by the syringomyelocoele of sensibility, muscular atrophy with fibrillary twitching, modifications of electrical reactions, spasmodic paraplegia, and finally, the progress of the affection. In the case of the second patient there was neither this complete dissociation of sensations nor the spasmodic paraplegia. It is very well known that these two signs may fail in the course of syringomyelia. Indeed, in this disease, one rarely proves, the authors think, the complete dissociation of sensibility. There is rather the incomplete dissociation, that is to say, a hypesthesia to simple touch sensation associated with analgesia, pricking and temperature sensation. On the other hand the absence of spasmodic paraplegia simply shows the soundness of the pyramidal region to be unaffected by glioma. Besides, syringomyelia is the only affection which can explain the appearance and slow progress of muscular atrophy of a myelopathic character, and the additional sensory symptoms. In these cases the sensory affections were very strictly localized in certain root regions well delimited, corresponding exactly to those figured by Kocher: the root territory above the brachial plexus and the cervical root region, in the first case; the roots below the brachial plexus and the region of the dorsal roots in the second. Moreover, this root distribution is demonstrated from the standpoint of both motor and sensory symptoms. In the first patient there was a particular injury to the muscles corresponding to the higher roots of the brachial plexus, and also to a slight degree, especially on the right, to the muscles corresponding to the third and fourth cervical roots (trapezius). It was noted, moreover, in this patient, that the gliomatous process extended unequally to the anterior and posterior cornua, while sensation was a little more affected on the right than the left, motility was affected more on the left than the right. In the second

patient only the muscles corresponding to the lowest roots of the brachial plexus were attacked; in these the lesions of motility, as those of sensibility, were much more accentuated on the right than on the left. The authors emphasize the marked character of the syringomyelic dissociation of sensations in the first case, dissociation as perfect as in a case of spontaneous hematomyelia, observed at the Charcot clinic: simple touch was perfectly preserved without error in localization, without hesitancy; sensations of pricking and temperature were abolished to repeated stimuli. The patient had been examined at intervals of weeks without the possibility of finding any modifications in sensibility. The only differences found were hypesthesia in the peripheral zones; in one of the last examinations a mild hypesthetic zone for pricking sensation was found, which was prolonged externally in a line from the upper part of the arm to the wrist.

2. *The Question of Subcortical Motor Aphasia.*—Dr. Ladame, of Geneva, concludes as follows: (1) That the symptoms erroneously considered as characteristic of motor aphasia, called subcortical, are observed in cortical lesions of the frontal operculum. (2) That agraphia is by no means the necessary result of a lesion at the base of the convolution, as Broca, with certain authors, has maintained (Gowers among others). (3) That above all things the classification of motor aphasias as cortical and subcortical, must be given up as answering neither to clinical reality nor pathological anatomy.

3. *Mental Confusion and Brain Syndrome.*—MM. Pierre Marie and Georges Guillaumin have had excellent results from employing lumbar puncture for the persistent head troubles in Bright's disease. This case is reported both on account of its derived symptomatology and the rapid and evident relief brought about by lumbar puncture. A man forty-nine years old, a custom officer, entered the hospital August 3, 1901. He sat with his acutely aching head between his hands, leaning towards the right; he could scarcely understand or speak, his pupils were myotic. He finally pointed with his right hand to the occiput as the seat of his agony. Unfortunately, days before, a blister had been placed at the nape of the neck on suspicion of an encephalic tumor. He had been well until 1898, when he had had a mild, though long typhoid, treated copiously with antipyrin. After recovery he often suffered from violent headaches, which were unsuccessfully treated by all known analgesic methods. This headache had come a fortnight before and constantly increased. There were certain hallucinations of hearing, he answered unasked questions and confused people's identity, vomited suddenly and had double vision and insomnia. The knee reflexes were exaggerated; no sign of Babinski, but there was clonus of the left foot. The reflexes of the upper limbs were excessive, particularly the left. No atrophy or deflection of the tongue or any peripheral sign of basilar lesion. By a great effort he rose, and after many trials turned to the left. The percussion of the skull was painful in the entire occipital region. There were minor symptoms, and the man appeared to have atheroma; the headache was thought attributable to Bright's disease. There was mental confusion and cerebellar syndrome. Urine examination gave 4 gm. albumin to the liter. Uremia was diagnosed and a milk régime begun. The following day there was no improvement, and the patient responded to no questions; pulse was very weak and there were signs of chemosis; no other trace of cutaneous edema. Under these conditions lumbar puncture was proposed and performed immediately. Twenty cc. of clear liquid were drawn which first ran in a full

jet. Afterwards examination showed that it was mainly albuminous. The puncture was made at eleven in the morning. At two the next night the patient seemed awake, while at four he regained consciousness and answered questions. He confirmed the theory that he saw double, and for a week was troubled as though by a cloud, but the vertigo was much decreased. The occipital trouble entirely disappeared. On rising, his gait was uncertain, but there was no lateropulsion. The clonus of the left foot had disappeared and the reflexes were not exaggerated. In 1,200 cc. of urine there were 2 gr. 50 of albumin to the liter. The tongue was clean. On the sixth of August he went home. The milk diet raised the amount of urine to three and four liters, where it kept for about a month without headache or edema. He went out and apparently recovered good health for about a month and a half. Then torpor with frontal headache and some of the minor symptoms recurred. In three days there was a pronounced edema strictly limited to the cephalic segment; forehead, eyelids, cheeks, lips, ears and scalp were swollen, while neither the neck nor the rest of the body was affected. There were galloping heart sounds, sudden vomitings and continued hiccough; the former stupor was present. A second puncture was performed, and 30 cc. of liquid taken. There was relief of only short duration. During September the symptoms returned, becoming more serious each day until the 29th, when he died in a state of coma. This case appeared doubly interesting both clinically and in its therapeutic results because of: (1) Unusual symptoms of cerebral uremia causing confusion as to a mental or a cerebellar syndrome. (2) Evident and favorable effect of the first puncture (20 cc.), and favorable, but brief results of the second (30 cc.). The author remarks that one cannot help comparing this angioneurotic edema of the head with the arachnoideal edema which seems attributable to cerebral accidents. It would seem that in the central nervous system, the bulbs if irritated or compressed, bring about this cutaneous edema.

JELLIFFE.

Archives de Neurologie.

(1902. Vol. 13, No. 74, February.)

1. A Study of Six Cases of Benign Hystero-Alcoholic Paralysis of the Upper Extremity. J. GAURAUD.
2. Extension and its Application in the Treatment of Nervous Diseases. P. KOUINDJY.

1. *Hystero-alcoholic Paralysis*.—An interesting series of cases of which the principal characteristics were the following: All the patients were strong, well-developed men in the prime of life with every appearance of perfect health; but all were more or less addicted to excessive indulgence in alcohol, two of whom had been intoxicated a few hours before the onset of paralysis. In two instances the paralysis appeared during the night, in the remaining four during the day; in some cases the onset was sudden, without prodrome; in others slow, following slight pain in the cervico-dorsal region. Its appearance was generally accompanied by some numbness or tingling; but there was in no instance indication of traumatism or apoplexy, neither was there vertigo or severe pain. With the exception of one patient, the right upper extremity was affected, the condition being most marked in, and in several instances limited to, the hand and wrist; extensors and flexors were alike affected, motor impotence varying in the different cases. Anesthesia and analgesia were noted, but did not always correspond to the paralyzed area;

- vasomotor and secretory disturbances were exceptional. The visual field was found to be narrowed in five cases. Analgesia to energetic faradization lasted several minutes, and its gradual disappearance coincided with the return of motility. This mode of treatment was efficacious in every case, a cure being effected, in some instances, by one application.

2. *Extension in Nervous Diseases.*—"What is the effect of suspension upon the nervous system in general, and upon the spinal cord in particular?" is the question the author proposes for solution. Hegar, the originator of treatment by elongation, holds that the spinal column is lengthened 35 m.m. or more when the body is bent toward the lower extremities, and that the dura mater participates in this elongation to the extent of 25 to 34 m.m. The favorable effects of this method of treatment is regarded by most observers as due to cerebro-spinal hyperemia. Bogroff is quoted as stating that "Suspension acts by production of hyperemia and elongation of the neuroglia; that is, as a mechanical measure which alters in a special manner the nutrition of diseased tissue. Measurements of human subjects, taken in Charcot's clinic, before and after extension, are tabulated by the writer, and show a difference in degree of elongation between the cervical and dorsal regions, the change in the former being generally greater. Though the anatomo-pathologic influence of extension may be questioned, the author believes its influence upon symptomatology is undoubted. Raymond says: "Of all methods of treatment applied to tabes dorsalis, suspension is the most hopeful." A long list of observers record respectively, improvement in incoördination, insomnia, Romberg's symptom, paresthesia and anesthesia, vesical and rectal disturbances, vertigo, hearing, ocular affections, etc., from treatment by extension. Contra-indications to suspension as formulated by Raymond, are given as follows: (1) Cardio-vascular lesions in tabetics; (2) tubercular and emphysematous conditions; (3) apoplectiform or epileptiform attacks; (4) anemia and tendency to vertigo or syncope; (5) obesity. The writer concludes that extension is the only form of suspension which should be retained as an indispensable therapeutic measure in the treatment of nervous diseases; its application by means of the inclined plane being most desirable, and that therapeutically it should rank with the classical remedies, electro-therapeutics, specific treatment, etc, and should be essayed in all cerebro-medullary affections.

R. L. FIELDING (New York).

Rivista di Patologia Nervosa e Mentale.

(1902. Vol. 7, fasc. 1, January.)

1. Comparative Study of Corpuscular Resistance in the Insane and Normal Aged. G. OBICI.
2. Clinical and Histological Facts Concerning Softened Areas Surrounding Certain Tumors. G. B. PELLIZZI.

1. *Corpuscular Resistance.*—This article deals with the question of hemolysis in the aged, the method used for establishing the hemolytic process being that of Hamburger-Mosso, with Viola's modification. The fact has been established that not all red cells are alike isotonic, and that all do not give up their chromatic substance to solutions of the same concentration; thus has arisen the distinction between corpuscles of medium resistance spoken of technically as R. M. and those of minimum resistance R. Min. Deductions drawn from the present study were that: (1) R. M. in healthy individuals

remains within normal limits up to the seventieth year, when it decreases; (2) pathological senility manifested only by feeble mentality without complication of other grave psychical or physical disturbances, has no influence upon the hemolytic process in old age. (3) Increase in R. M., which indicates in certain conditions presence in the blood of a large number of young cells, may have a pathological character and even render the prognosis unfavorable in some cases, as does diminished corpuscular resistance ordinarily.

2. *Softened Areas Surrounding Tumors.*—This paper gives the findings at autopsy and histological examination in a case of epilepsy beginning after the fortieth year followed by monoplegia, hemiplegia and final dementia. A tumor was found in the motor area of the right side of the brain, occupying a cavity filled with transparent pale yellow fluid, containing fragments of softened neural tissue. The diagnosis of brain tumor was not made during life. A peculiar clinical feature was entire absence of the most characteristic symptoms of cerebral tumor, there being no headache, vomiting, or subjective disturbance of the organ of vision. An interesting study of manifestations in life, viewed in the light of post-mortem findings, is given. The histological analysis is too extended to be given within the limits of this abstract; suffice it to say that the tumor was an endothelioma developed from the meninges, rich in elements of probable sarcomatous nature and devoid of nervous elements; the surrounding liquid containing polynuclear neuroglia cells and fragments of neural fibers, etc. Noteworthy is the slow progress of the malady, the patient surviving twenty-five years after the onset of symptoms.

R. L. FIELDING (New York).

Neurologisches Centralblatt.

(1902. February 1, No. 3.)

1. Further Contribution to Asthenic Paralysis, with one Autopsy. S. GOLDFLAM.
2. Concerning the Eye-reflex, or the Eye Phenomenon. By v. Bechterew.
3. The Corneo-mandibular Reflex. By v. SÖLDER.
4. A Case of Early Tabes. By M. BLOCH.

1. *Asthenic Paralysis.*—A report of an interesting, but not unusual case of asthenic bulbar paralysis, with a very careful clinical and pathological report. A discussion of the latter is carried over to the following number.

2. *The Eye-reflex.*—Von Bechterew discusses in this article the reflex described last year by McCarthy as the supraorbital reflex, and claims priority of discovery, although he admits that outside of the Society reports he had not published his paper until after the publication above referred to. He agrees that the reflex is partly a true nerve reflex, and partly due to a mechanical irritation transmitted along periosteal, muscle and tendon fibers to the orbicularis muscle. He insists that the reflex may be elicited from the temporo-frontal region, the nasal region, and not seldom from the zygomatic arch.

3. *Corneo-mandibular Reflex.*—Sölde describes a new reflex in the distribution of the fifth nerve. It is elicited by corneal irritation and results in a slow, sometimes a quick, lateral movement of the inferior maxilla. The jaw must be held partially open and released. The reflex arc consists of the first branch of the trifacial, the fifth nu-

cleus, and the third branch. He thinks it may be of some value in localizing lesions at the base of the brain (Hirnstamme).

4. *Early Tabes*.—Bloch reports a case of tabes in a girl of seventeen years. Argyll-Robertson pupils, loss of reflexes, ataxia, bladder and sensory disturbances were present. Puberty had not yet developed. There was no history of syphilis in father or mother. The other children were healthy. Precordial distress, with palpitation and fear, occurred occasionally in this girl, and were considered by Bloch to be possibly "heart crises." MCCARTHY (Philadelphia).

Nouvelle Iconographie de la Salpêtrière.

(1901, 14th year, No. 5, September-October.)

1. Pathological Anatomy of Hereditary Cerebellar Ataxia. SWITALSKY.

2. Researches Upon the Anatomical Structure of the Nervous System of an Anencephalus. N. VASCHIDE AND CLAUDE VURPAS.

3. A Case of Hysterical Breast. LANNOIS.

4. Paralysis of the Ulnar Nerve with Contractures Resulting (Main en Pince). JACINTO DE LEON.

5. A Case of Ostitis Deformans of Paget, with Melanodermia. Autopsy. L. HUDELO AND J. HEITZ.

6. The Influence of the Work of One Muscle Upon the Activity of Other Muscles. CH. FÉRÉ.

1. *Hereditary Cerebellar Ataxia*.—Pierre Marie first differentiated this disease from Friedreich's disease, with which it has many similarities. The author of this paper has had the opportunity of studying two cases in the service of Marie and of making a microscopic study of the nervous system in one of them. A careful clinical account of these cases has been published by Klippel and Durant in the *Revue de Médecine*, Oct., 1892. A résumé of the pathological findings in this case is the following: Degeneration of the fibers in the column of Goll, in the direct cerebellar tracts, in Gowers' tract. Atrophy of the grey substance of the cord with disappearance of the cells. In the medulla degeneration of the direct cerebellar tract and of Goll's column. A considerable atrophy of the direct cerebellar peduncular fibers, proliferation of the ependymal connective tissue of the fourth ventricle and of the aqueduct of Sylvius. In the cerebellum there was a diminution in the number of convolutions, and the fissures were very large. In the cortex there was found a non-stainable zone lying between the granular and molecular layer. Reduction in volume of the white substance. Atrophy of the right optic nerve. There is a disappearance of the large calibred fibers and a considerable augmentation of the small ones in the peripheral nerves and in the nerve roots. Hypoplasia of the blood vessels. The results of the anatomical study of these cases, as compared with the few cases found in literature show striking differences but, as a whole, the lesions are similar. The author formulates the following tentative theory to explain the pathogenesis of hereditary cerebellar ataxia: An individual who is to suffer with this disease, comes into the world with a weakened nervous and vascular system. This weakness is confined more or less sharply to the cerebellum and its nerve tracts. Up to a certain age there exist no symptoms referable to the nervous system because the vascular system, though below the normal, suffices for nutrition. At the moment when the fibers already weak become more rigid on account of age or some other cause, they can no longer nourish the nervous system.

The parts with power of resistance do not show any effect from the lowered nutrition, but the weakened parts do. In the beginning the symptoms seem to have but little significance; they are vertigo, fulness, etc., all however, pointing to their cerebellar origin. Later, the nervous system begins to react to the lessened nutrition and atrophies. This atrophy is shown in the beginning by diminution in volume of the fibers, which causes a lessening in volume of the cord, bulb, etc. At this stage, the symptoms become typical of the disease. If the patient dies at this time, we find a simple atrophy of the nervous system, as in the cases of Nonne and Fraser. If the condition persists, or if the vascular system is especially weak, the degeneration of nervous fibers results and extends not only to the cerebellum, but to the rest of the nervous system as well.

2. *Anatomy of Anencephalus.*—A careful microscopic study of the nervous structure of an anencephalus. This paper is a continuation of two former articles by the same author on the psychology of the vital acts of an infant with total absence of brain and the biological life of an anencephalus. The following conclusions are noted in a résumé of the physiological and anatomical data observed in this study: (1) Spontaneous movements or associated movements are possible in spite of the total absence of the pyramidal tract. The function of the pyramidal tract is inhibitory rather than dynamic; (2) the nerve-cells were found definitely degenerated throughout the whole extent of the nervous axis; the sensory-motor reaction was present; (3) in spite of the advanced state of degeneration found in the nerve-cells, the nerve-roots presented no lesion or evidence of degeneration; (4) in spite of the pathological condition of the nervous system and especially of the nerve-cells, the muscles were normal in form and in motility; (5) at the level of the quadrigeminal bodies two symmetrical nuclei were found composed of motor cells. As the third and fourth pair of motor nerves were missing, this might be the location of the superior facial nucleus; (6) in the cord behind the anterior commissure, crossed fibers going from one anterior horn to the other were observed. These fibers explain perhaps the synergical movements which took place in spite of the absence of long motor fibers; (7) the absence of the restiform bodies and the arciform fibers was explained by the absence of the cerebellum. The inferior and the para-olivary bodies were found wanting. This is a further proof of the intimate relation of the cerebellum with the cerebrum. (8) Dilatation of the ventricles and the continuation on each side of the ependymal elements with the adjacent tissues were noted; (9) increase in number of the neuroglia cells; (10) inflammatory process involving the nervous tissue, the meninges, and the blood vessels. This case can be considered as a natural experiment in physiology and it tends to prove that a rudimentary biological life exists which is independent of the functions of the superior nervous centers.

3. *Hysterical Breast.*—Clinical résumé: Woman aged forty-seven years; hysterical symptoms; convulsive attacks; globus, painful sensations, polyuria, pollakiuria, permanent stigmata, as profound anesthesia of the right side, hyperesthetic zones over ovaries and breast, hysterical clavus, etc. For fifteen months without any appreciable cause, the breast has become the seat of painful sensations, cutting and burning in nature. At the same time, there was such a marked increase in its size that, in the belief that she was attacked by cancer, she entered the surgical division of the hospital for operation. The right breast was found to be enormously hypertrophied,

the left normal in size. The skin over both breasts is normal. Hysterical breast shows itself most commonly by symptoms of neuralgia, the so-called "mastodynia." Simple hypertrophy of the breast is always unilateral and is less common.

4. *Paralysis of Ulnar Nerve*.—Two cases of contracture following a paralysis of the ulnar nerve. In both cases a peculiar attitude of the hands was produced, which Dupuytren has described in connection with the retraction of the palmar fascia. The author calls this attitude "main en pince." Case I. Paralysis of the ulnar nerve following prolonged anesthesia for laparotomy. The left hand remained contracted. The first phalanges were in forced extension, the second and third in slight flexion; extension and flexion more accentuated in the fourth and fifth fingers. The fingers abducted, the tendons of the long extensors very prominent on the dorsal aspect. Movements of abduction and adduction abolished. Voluntary flexion of the fingers very feeble? Adduction of the hand abolished. It was impossible for the ends of the fingers to touch each other on account of the limitation of motion; this was especially marked in the ring and little fingers. Case II. A man, seventy-eight years old; thirty years before was struck with a bullet in the internal and inferior aspect of the arm. This produced a painful paralysis of the hand and finally led to the following condition of the fingers: The last three fingers in forcible flexion, the third phalanx upon the second, the second upon the first, and the three fingers upon the palm of the hand. This flexion was so forcible that the nails were driven into the skin. The thumb and index finger functionate normally, at least for flexion and extension. In the first case hysterical contraction was considered as a possible factor, but it was excluded. The article is illustrated by beautiful photographs.

5. *Ostitis Deformans*.—A report of the microscopic findings of the bones, viscera and nervous system of a case of ostitis deformans of Paget. The findings in the nervous system were not marked enough to attach to them any great importance in an etiological way. The paper is a very complete one, containing many excellent photographs of the bone lesions, as well as a full discussion of the cases in literature. An abstract of this paper from the neurological standpoint does not seem to be indicated.

6. *Influence of Muscular Work*.—No abstract of this article is practical, on account of the complicated mass of experimental data.

S. SCHWAB (St. Louis)

MISCELLANY.

ACTION OF BACTERIAL POISONS ON PERIPHERAL NERVES. Dopter and Lafforgue. (Archives de Médecine Expérimentale, July, 1901.)

These authors have gone completely over this subject by the experimental inoculation of a large number of such substances. They employed diphtheria toxin, tuberculin, bacillus pyocyaneus, streptococcus, staphylococcus, pneumococcus, pneumobacillus and cholera and pest toxins. Soluble products of the colon bacillus gave practically no results. These various substances were inoculated locally around the peripheral nerves of guinea-pigs. Account was taken of the clinical symptoms produced and a microscopic examination of the nerves was made. They believe that inflammations of the peripheral nerves of infectious origin are due to the action of bacterial substances circulating in the peripheral blood-vessels. These penetrate by dialysis into the interior of the nerve

fiber at its most vulnerable point, the nodes of Ranvier. They exert a necrosive chemical action on the elements of the interannular segment sometimes the axis-cylinder being relatively more affected than the other parts. The entire picture resembles a peri-axillar segmentary necrosis. If the axis-cylinder submits to grave alterations rupture and fatal degeneration follow, accompanied by the characteristic symptomatic conditions. HIGLEY.

TABES AND DIABETES. W. Croner (*Zeitschrift für klinische Medicin*, 1901, Vol. 41, No. 1-4.)

Many symptoms are common to both tabes and diabetes and even with positive signs it may be doubtful for some time whether one is dealing with the transient glycosuria of the nervous disorder or with a diabetes in which the neuritic symptoms are most prominent. According to the author both diseases rarely occur together. Among symptoms characteristic of both may be mentioned irregular areas of anesthesia or analgesia, paresthesiæ, especially about the legs and sexual organs, increased sensitiveness toward cold, lancinating pains, diminished sexual vigor, and trophic and secretory disturbances, such as *malum perforans pedis*, *decubitus*, *hyperidrosis* and muscular atrophy. Even Westphal's sign may occur in diabetes, but is of no prognostic importance. In those few cases, however, where both diseases really occur together, it may reasonably be asked whether this is accidental or whether some common etiological factor exists. The rarity speaks for coincidence, yet diabetes and tabes have been seen in different members of the same family, and diabetes has occurred after injury to the cord. Diabetes insipidus may occur with tabes and it is admitted that the former not so seldom develops into diabetes mellitus. Finally, syphilis is looked upon by many as being capable of producing both disorders.

UEBER DIE KLINISCHEN FORMEN DER GEFÄNGNISSPSYCHOSEN (The Clinical Forms of Prison Psychoses). Rüdä (Allg. *Zeitschrift für Psychiatrie*, 1901, lviii, 2 and 3, s. 447).

After reviewing briefly the opinions of different authors since the middle of the last century, the author gives the results of his investigation of the cases of insane prisoners at Heidelberg during nine years. There came under his observation 94 cases, 84 men and 10 women. Among these he found by far the most frequent clinical type to be katatonia, which occurred in 50 cases (or 55 per cent.). This form again he divides into three groups, the first and largest being what he calls the "vagrant group," in which, after a somewhat variable period of normal development, order and industry, the young patient gives up work and takes to wandering about, begs and finally commits petty thefts which bring him into conflict with the authorities. There may be no marked mental symptoms other than the above, or there may be even before arrest, symptoms of katatonic or hebephrenic character. His second group is that of "habitual criminals," persons who from youth have been addicted to theft, violence and other crimes, who prior to imprisonment have shown no definite symptoms of insanity, but who during confinement (and generally in solitary confinement) develop katatonic symptoms. The third group consists of his "occasional criminals," who have been in the main normal, but who develop katatonia during solitary confinement on account of a single grave crime.

Next to katatonia in frequency, he has found the alcohol psychoses, in all 9 cases, of which 6 were of delirium tremens and 3 of chronic alcohol "Wahnsinn" (delusional insanity). Next came epilepsy

and hysteria, of the first 8 cases, of the second 3 cases. Further he encountered 2 cases of imbecility, one of "chronic paranoia in epilepsy (Buchholz), and 3 cases of "paranoia (Kraepelin)." In the remaining cases the diagnosis could not be made with certainty owing to imperfect anamnesis or too short observation. In all the cases it was evident either that the mental disturbance commenced before the imprisonment or that it lasted longer than could be accounted for by the injurious influence of confinement. Also that the types of disease were such as commonly occur in persons who never have been imprisoned.

That there is any special form of insanity peculiar to prisoners seems negatived, but study of the Heidelberg material shows that every form of psychosis occurring in a prison may present at least temporarily a symptom-complex, made familiar by various authors and consisting in the presence of hallucinations especially of hearing (promises of pardon), delusions of persecution and unseen influence, anxiety, uneasiness and irritability. This symptom-complex is not specially dependent upon solitary confinement, but occurs also in collective confinement. It is noteworthy that the above symptoms occur not only in forms of mental disease in which hallucinatory episodes are common, but also in those in which hallucinations of hearing are excessively infrequent. In the first case the hallucinations are simply calmed by the prison surroundings; in the second, the influence of solitude, contrition and the excitement of examination act so powerfully as to produce them even in diseases in which hallucinations are usually absent.

Both classes tend to improve when removed from the prison surroundings, but whether recovery takes place or not is dependent upon the character of basal disease.

ALLEN.

EXPERIMENTELLE UNTERSUCHUNGEN ÜBER DIE WIRKUNG DES DIPHTHERIEGIFTES AUF DAS NERVENSYSTEM (The Action of Diphtheria Toxin on the Nervous System). Bielschowsky and Nartowski (Neurol. Centralbl., July 1, 1900, p. 638).

These investigators describe experiments which they have recently carried out in Mendel's laboratory. The pathological changes have been located in three situations—the peripheral nerves, the spinal cord (parenchymatous and interstitial myelitis, with secondary changes in the nerves and muscles), and the muscles. The authors injected diphtheria toxin into white mice, rabbits, and guinea-pigs. Large doses produced rapid death, with anatomical evidence both of general intoxication and of a special action on the vascular system. The animals which survived this stage developed, eight or ten days after the injection, more or less typical post-diphtherial palsy. The vessels were found quite full and with pathological changes in their walls leading to scattered foci of hemorrhage. There was no sign of meningitis or encephalitis, nor were the nerve cells of the brain or cord with a few isolated exceptions affected. Preparations by Marchi's method showed nothing noteworthy in the brain or cord, but extensive degeneration of the myelin sheaths of the peripheral nerves; this was confirmed by Weigert's procedure. The muscle fibers were the seat of fatty change. The conclusion is drawn that the essential lesion is parenchymatous degeneration of the peripheral nerves; the slight changes in the anterior horn cells are held to be secondary or of cachetic origin; while the vascular alterations play but a subordinate rôle in the pathogeny of post-diphtherial palsy.—*B. M. Journ.*

Book Reviews.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D. Vol. iv, December, 1901. Diseases of Digestive Tract and Allied Organs: Liver, Pancreas and Peritoneum, Genito-urinary Diseases, Anesthetics, Fractures, Dislocations, Amputations, Surgery of the Extremities and Orthopedics. Diseases of the Kidneys, Physiology, Hygiene, Practical Therapeutic Referendum. Lea Brothers & Co., Philadelphia and New York.

This volume of Progressive Medicine contains an especially valuable résumé of a number of contributions to recent literature on the subject of anesthetics. The discussion of this important adjunct of surgery, at the 30th German Surgical Congress held in Berlin in May, 1901, furnishes abundant material. Mikulicz says that since the collection of Gurlt's statistics with regard to narcosis, matters have changed very much and local anesthesia must always be considered as a possible solution of difficulties connected with general anesthesia. Besides the subject of general anesthesia, the subsidiary questions of the various methods of local anesthesia and of spinal anesthesia receive full discussion.

The chapter on genito-urinary diseases contains some extremely interesting material. The old question of the possibility and of the severity of non-specific urethritis is illustrated by recent studies made in connection with microscopic investigations. The question of treatment in gonorrhea is very thoroughly considered and it is announced that while protargol remains the favorite, nargol, a newer preparation, has decided advantages, which are securing recognition. Nargol may be injected in the acute stage, combined with berberine—five grains of nargol and one grain of berberine to the ounce of water, being the beginning dosage.

Dr. Thornton's practical therapeutic referendum at the end of this volume contains some very thoroughly useful prescriptions, some of them containing valuable drugs not well enough known in this country.

JELLIFFE.

ARBEITEN AUS DEM NEUROLOGISCHEN INSTITUT AN DER WIENER UNIVERSITÄT. Herausgegeben von Prof. Dr. Heinrich Obersteiner. Heft viii. Franz Deuticke, Leipzig und Wien, 1902.

Neurologists are very familiar with these "Arbeiten" from Prof. Obersteiner's laboratory in Vienna, and the importance which these publications have acquired is shown by a comparison of this latest and extensive volume with the much smaller first number. One is impressed in reading this latest volume by the attention that has been paid to anatomical and pathological subjects irrespective of their bearing on clinical neurology. There seem to be fewer cases studied both clinically and pathologically than have been contained in former numbers of the "Arbeiten."

Only a few porencephalic brains have been examined microscopically, indeed, only three (Dejerine, Kreuser, Schupfner) according to Obersteiner, and his own case reported as the subject of the leading paper in volume viii of the "Arbeiten," makes four. The reason for this is easy to understand. The scarcity of microscopical investigations is owing partly to the desire to preserve valuable gross specimens, and partly to the great amount of time and labor necessary for careful microscopical study. Obersteiner's case was a most extraordinary example of porencephaly, the extensive openings involving almost symmetrically the middle portion of each cerebral hemisphere. In this case the right optic tract was entirely undeveloped, and yet the nerve fibers in each optic nerve were about equal in number, from which Obersteiner argues that the crossed fibers must about equal the uncrossed fibers in number; an opinion which does not seem to be generally held. In this case the cerebral acoustic tract from the right posterior colliculus of the corpora quadrigemina to the temporal lobe was absent. The case showed that a lesion of the visual fibers within the cerebral hemisphere could cause atrophy of the visual system even as far as the optic nerves; whereas in the acoustic system atrophy from a similar lesion did not extend beyond the corpora quadrigemina. Obersteiner believes that in his case hydrocephalus developed first, and by pressure on the walls of the dilated lateral ventricles and the middle cerebral arteries caused porencephaly.

Nose describes the structure of the normal human cerebral dura. His paper is a preliminary report. Collections of blood corpuscles within the dura, resembling hemorrhages, were found by him in all the cases he studied, they therefore could hardly have been pathological, and yet their significance is unknown.

The case of intradural endothelioma of the upper cervical region reported by Schlagenhauser is interesting on account of the intense compression of the medulla oblongata it caused without secondary ascending or descending degeneration.

The paper by Steindler is an anatomical study of the velum medullare posterius. This structure is constant in mammalia, and is probably a rudimentary portion of the cerebellum.

Marburg describes the pathology of the spinal ganglion. He has observed cell-bodies of these ganglia with two nuclei. This he regards as abnormal development in embryonal life, and not as pathological. The homogeneous contraction of the nucleus he thinks is distinctly pathological only when it occurs in pathological cells. The eccentric position of the nucleus is always pathological. Marburg discusses in this paper changes in the cell-body, neuronophagia, changes in the nerve fibers of the ganglion, hemorrhage, softening and cyst-formation in the ganglion.

Frankl-Hochwart has studied the brain of the mole. This animal is completely blind, and therefore it is useful in the study of the visual system. He concludes that the habenula, the subthalamic body and the posterior commissure are not part of the visual system. The external geniculate body is not altogether deficient in the mole, but is very insignificant, and from this Frankl-Hochwart concludes that the external geniculate body may have some minor function in addition to that of vision. There is no indication of nuclei of nerves to ocular muscles in the mole, and yet the posterior longitudinal bundle is well developed, so that the portion of this bundle which unites the nuclei of ocular nerves cannot be very large. The root of the seventh nerve is well developed in the mole, while the sixth nucleus is absent, and this is further proof of the correctness of the now generally

accepted teaching that the seventh nerve has no origin in the sixth nucleus.

The case reported by Spieler was one of lipoma of the corpora quadrigemina, arising from the pia. This seems to be the fourth case of lipoma of this region. References to the literature on this rare tumor of the central nervous system are given. When intracranial lipoma does occur it is more common in the aged than in the young.

Marburg has a paper on the granular layer in the olfactory bulb of the guinea pig.

Karplus reports two cases of aneurism of intracranial arteries; one, an aneurism of the posterior communicating artery, was found in a person who had had migraine. The migraine was supposed to have been inherited, and not to have been caused by the aneurism, but it is probable that the vasomotor disturbances occurring during the attacks of migraine contributed to the formation of the aneurism. Probably a tendency to vascular disease also was inherited.

The second case was one of aneurism of the internal carotid. The diagnosis was made during the life of the patient, and the common carotid artery was tied. The patient, a woman, sixty-nine years of age, felt suddenly severe pain in the left side of her head. Constant headache and roaring in the left ear developed. Three days later left-sided ptosis and diplopia were noticed. A rhythmical murmur in the head, synchronous with the pulse, especially distinct on the left side, could be heard by the examiner. Compression of the left carotid artery caused the murmur to disappear. As general symptoms were not observed at the beginning of the attack, rupture of the aneurism with diffuse hemorrhage seemed improbable. The rupture occurred into the cavernous sinus and yet no signs of obstructed circulation were found in the eyeball, and the eyeball did not pulsate. Karplus discusses the dangers of ligation of the common carotid, especially in reference to cerebral softening and thrombosis.

Imamura's paper is devoted to the anatomy of the choroid plexus of man.

Zappert describes a fissure sometimes found in the posterior part of the lateral column, and which may penetrate deeply into this column. It is present only in the cervical and upper thoracic regions, and probably is not a pathological condition.

A long paper by Obersteiner and Redlich is on the fasciculus subcallosus and the fasciculus fronto-occipitalis.

Berl has studied the relation of the visual tracts to the anterior colliculi of the corpora quadrigemina.

Schacherl has a paper on the anatomy of Clarke's columns, and gives numerous references to the literature on the subject.

A short paper by Obersteiner on the fissure in the lateral column already referred to, completes this important collection of papers. Complete agenesis of the pyramidal tracts alone is not sufficient, he thinks, for the formation of this fissure, but there must also be a tendency to fissure formation.

SPILLER.

SYPHILIS UND NERVENSYSTEM. Siebenzehn Vorlesungen von Dr. Max Nonne. Oberarzt am Allgemeinen Krankenhaus, Hamburg. Ependorf. Mit 42 Abbildungen im Text. Verlag von S. Karger, Berlin, 1902.

In 1887 Rumpf published his well-known monograph on syphilis of the nervous system; in 1897 Oppenheim contributed a very thorough article on syphilis of the brain to Nothnagel's System, and now Nonne of Hamburg sees fit to issue a series of seventeen lectures

in which he discusses fully and lucidly the relations of syphilis to the nervous system. These lectures give not only an accurate and critical summary of all that is known on this subject up to the present day, but are so full of personal experiences and reveal such a thorough grasp of every phase of this subject that the book is a most valuable addition to neurological literature. Those who think that there should be an end to books and lectures on syphilis, and on nervous diseases due to syphilis, do not know how intricate the subject is, and how many points still call for elucidation. We recommend Nonne's lectures to medical men for most careful study. Some young neurologist would do well to furnish an English translation.

The reviewer will select a few points for especial mention so as to show the author's position on some questions that are of particular interest. In the second lecture Nonne discusses the three different kinds of lesions: syphilitic neoplasms, chronic hyperplastic inflammation and disease of the blood vessels. The blood vessels may suffer in a mechanical way from syphilitic growth in the meninges and in the nervous tissue itself; they may be affected by luetic processes near them; inflammation of the vasa vasorum may lead to disease of the vessel walls. The media and adventitia suffer first, the intima is affected secondarily, giving rise to Heubner's form of endarteritis; this form may also be associated with the development of isolated gummata. Syphilis predisposes to atheromatous degeneration of the arteries.

The importance of gummatous meningitis is insisted upon in several lectures, and the variability of the clinical symptoms is clearly shown to be dependent upon the progressive and retrogressive changes in the morbid products. The lectures on syphilitic basilar meningitis, and the somewhat optimistic views regarding the prognosis of brain syphilis deserve special notice. Nonne speaks of the frequency of syphilitic epilepsy and instances some cases in which both epilepsy and tabes were developed in the wake of a syphilitic infection. The author concedes the important bearing of syphilitic contagion upon the development of dementia paralytica, but allows that there are other occasional etiological factors. In speaking of spinal syphilis, the frequency of meningeal and root symptoms is properly accounted for; spinal arteritis is referred to, systemic degenerations are denied, but the "systems" may be affected in irregular fashion. Erb's special type of syphilitic spinal paralysis is shown to be a post-syphilitic combined systemic affection. Those who doubt (and there are some such) the existence and frequency of syphilitic pseudo-tabes will do well to read the section on this subject.

Explicit histories, illustrating every phase of the subject, and related with commendable brevity, add much to the value of this book.

B. S.

News and Notes.

DR. HENNEBERG, Assistant in the psychiatric clinic at Charité, Berlin, has been made Privat Docent.

DR. DÖLKEN has been appointed Privat Docent in the Leipzig nerve clinic.

AT THE Kiewer University (Russia), Dr. W. Scelezki has been appointed Privat Docent.

ARCHIVOS DE CRIMINOLOGIA MEDICINA LEGAL Y PSIQUIATRIA is the name of a new monthly journal devoted to the study of abnormal mental life. It is published in Buenos Aires under the editorial supervision of Dr. Félix Lima. The editors are to be congratulated on its very fine appearance. We wish for it many years of success.

DR. PEARCE BAILEY has been appointed a member of the Board of Managers of Craig Colony.

NEW AMUSEMENT HALLS for the Northern Hospital for the Insane at Oshkosh, Wisc., and for the State Hospital for the Insane at Yankton, S. D., have just been completed.

DR. J. S. NEWCOMB, formerly of Sprague, Wash., has been appointed assistant superintendent of the Eastern Washington Hospital for the Insane at Medical Lake.

DR. H. A. TOMLINSON, superintendent of the St. Peter, Minn., State Hospital for the Insane, has introduced an interesting experiment by the formation of a King's Daughters circle among the female patients. The members of this unique circle, which has only been in existence a few weeks, are now busy and happy making all sorts of fancy and useful articles to be sold for the benefit of their circle. The principal object aimed at in this innovation is the mental benefit to be derived from some light and interesting occupation.

AN ANNEX to the Alabama Bryce Hospital for the Insane, at Tuscaloosa, Ala., has been erected at Mount Vernon, Ala. It will accommodate six hundred patients, and is for negroes only. It will be occupied in April.

A BILL has been introduced in the Kentucky Legislature to establish an epileptic colony at the State Asylum for the Insane, at Lakeland. The bill provides for an appropriation of \$75,000.

For the past fifteen years the advertisement of the Chas. H. Phillips Chemical Company has occupied the upper half of the first page of advertising matter. Many of our readers have missed it since the first of the year. It is to be found on the lower half of page facing first page of Publishers' Announcements.

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"Pediatrics," issue of November 1st, 1900, pages 349, 347, 338, 344.

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A NATURAL NERVE NUTRIENT

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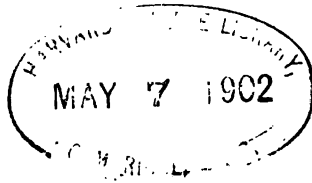
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THE MUSCULAR FACTORS CONCERNED IN ANKLE-
CLONUS.¹

BY S. WEIR MITCHELL,
OF PHILADELPHIA.

In a case of trauma of the spinal cord, seen lately in consultation with Dr. Guy Hinsdale, I observed that the very remarkable ankle-clonus present was the work of the soleus muscle alone; the gastrocnemius was entirely passive.

I confess to having been surprised, as I had always taken for granted that the whole group was concerned. In fact, in Gowers' and in Dercum's works on nervous diseases the gastrocnemius is distinctly mentioned as the active agency in causing ankle-clonus. Usually no muscle is mentioned in the text-books. Oppenheim, the latest, is thus silent.

I at first supposed that Dr. Hinsdale's case was an exception to the rule, but on examining a number of cases of spastic conditions I was interested to observe that in all of them the soleus alone was active in clonus of the ankle. The proof is readily to be had in thin spastic patients.

To test the matter let the patient be at rest—supine—with the leg fully flexed on the thigh. Then, grasping the

¹Read before the Philadelphia Neurological Society, March 25, 1902.

belly of the relaxed gastrocnemius with one hand, with the other start the clonus. It will be observed that, as the foot is flexed by the hand, the gastrocnemius is felt to become tense, but that as extension occurs no motion is felt in the belly of that muscle. The active agent in the series of extensions which we thus observe can only be the soleus. In fact, if now during clonus we keep the leg flexed and press the fingers in under the gastrocnemius, and especially when on the inside of the leg the soleus can be felt behind the gastrocnemius masses, we shall feel the soleus harden each time the foot is extended.

This proof we obtain best in thin persons, but any one can obtain it on himself in a very simple way by calling forth what I may call normal clonus.

This phenomenon is not, I think, mentioned in the books, and yet is a familiar fact.

To get this clonus let any healthy man sit forward on the edge of a chair with the leg in at least 45° of flexion; let the weight of the leg rest on the toes. If needed to aid the production of clonus press down with the hand on the knee. It is easy then to start the movement. It may go on for minutes, an entirely unwilld action. While the foot is thus in motion, by grasping the two muscles in turn one can make sure that the soleus alone is actively concerned.

When from spinal disease the soleus reply to a sharp pull gives us the phenomenon of clonic contractions, we are seeing precisely the same reaction which under other mechanical conditions may be evoked in health.

The last proof of this identity is found in the fact that the time (7 to 8 per second), is much the same in normal clonus and in that of disease.

It is clear that the soleus alone is concerned in clonus. But why does not the gastrocnemius itself respond to quick flexion of the foot? The explanation seems to lie largely in the mechanical relations and attachments of the two muscles we are considering.

The gastrocnemius is inserted on the femur; the soleus on the tibia; both by a common tendon on the heel. If the leg

be put in extreme passive extension on the thigh the pull made thus on the common tendon is so great as to forbid either muscle's being sharply enough jerked in flexion to occasion muscular response. If now we flex the leg on the thigh, as the gastrocnemius is attached to the femur it will become too relaxed for this to occur. The soleus, however, left independent by reason of its tibial attachments, may then be jerked freely through sudden passive foot flexion and be free to respond, as it does. So long as the common tendon is very tense from the gastrocnemial pull the soleus cannot be jerked by foot flexion. In fact, notwithstanding their common insertion, the soleus and gastrocnemius have rather distinct purposes, as I found well stated in Duchenne's "Electro-Physiologie," p. 424, as follows:

"When the leg is flexed on the thigh the gastrocnemius is so shortened (he should say relaxed) by reason of its upper hold on the femur as to lose almost all power to extend the foot. The soleus, then, because of its attachment to the tibia, is still left competent to extend the foot."

In fact, except when the weight of the body has during walk or station to be lifted on to the toes, these two muscles are independent. But for all the slighter acts of extension the soleus alone is used.

There is possibly another and a singular fact involved in the absence of clonic response by the gastrocnemius. The reply to the sharp pull which causes the knee-jerk, ankle-jerk or clonus is not the same, or equal, in all muscles. Like the muscular response to a blow, it can be had easily in certain muscles and far less readily in others.

Extreme tension is unfavorable to these responses, so also is full relaxation. Hence one additional reason why the gastrocnemius cannot be made to respond in any position may be that it is simply less excitable than the soleus. This normal difference in irritability is true, for example, as to the relative effect of a blow on the extensors and on the flexors of the arm.

The matter I have discussed is, after all, of no great moment, but it is always interesting to find a new clinical fact and to assign symptoms to their correct cause.

TWO UNUSUAL FORMS OF CLONUS: TOE CLONUS AND LATERAL ANKLE-CLONUS¹.

BY JOHN K. MITCHELL, M.D.

A case of disseminated sclerosis under my charge at the Infirmary for Nervous Diseases presents two interesting forms of clonus which I cannot find described. The deep reflexes are all exaggerated, but very variable; no Babinski; no rectus-jerk; there is crossed knee-jerk, scanning speech, nystagmus, lateral head movements, some muscular wasting and general spastic rigidity. The case has been variously diagnosticated as cerebral diplegia, Friedreich's ataxia and multiple sclerosis. The ankle-clonus is very small, but prolonged and rapid. From the tracings which Dr. Eshner has made the rate is easily calculated as 7.2 per second. In taking the ankle-clonus, which can be brought out by a mere touch, I found that to push the foot a little to one side instead of upward produced a rapid lateral clonic movement, entirely in one plane. Its extreme excursion is not more than three-quarters of an inch, the speed being 6.5 per second. Both these rates are about the same as those of the ordinary ankle-clonus.

The lateral motion could usually be produced by giving the great toe a slight sharp inward push—and releasing it. The muscles being all in an unnaturally tense state and over-irritable, this starts the contractions, just as pushing the foot upward smartly starts some of the posterior leg muscles into clonic activity. But in ordinary ankle-clonus the opposing force is supplied by the hand, and in this side-wise movement this element of necessary opposition is wanting; the muscles themselves must supply it. The excursion is so short and the muscles which might produce it so small and deep-set that it is difficult to be certain of the special muscles concerned. At first we thought we detected movements of the anterior tibial,

¹Read before the Philadelphia Neurological Society, March 25, 1902.

and in some later experiments this muscle appeared to contract, but not always. With the foot in the extreme flexion which was its usual position the tibialis anticus would share in the production of a lateral movement. The peronei are more certainly concerned, but whether all unite in it, or whether it is due to the peroneus longus alone, cannot be made out. Opportunity for further study of this may possibly be had, although the patient has left the hospital.

She presented another small point of interest. The toes, which are small and imperfectly developed, were always somewhat rigidly half-flexed, the ungual phalanges bent upon the pedal. In an effort to straighten them or to try whether they could be straightened, a toe-clonus was started. It was slow, not more than three to four times a second, and was exhausted by eight or ten contractions. If it was excited by carefully pushing up the ungual phalanges with a force too slight to alter the position of the foot, the clonic movement was limited to the toes; if the push were stronger so that the foot moved on the ankle, ankle-clonus appeared. The toe-motion was performed by the interossei, the flexor brevis and longus not coming into play.

Theoretically, any muscles may exhibit the phenomenon of clonus, which is only a rapidly renewed contraction of a muscle, induced by over-stretching it suddenly; but clonus at the ankle and at the wrist are the only forms in which the phenomenon has diagnostic value; the rectus and jaw clonus are too uncertain. But it is not altogether a pathologic sign, and a clonus can readily be started in any person, as Dr. Weir Mitchell has remarked, by putting a set of muscles into an unnatural tension and keeping them so. This over-tension is a necessary precedent. Muscles already in a greater state of tension than normal are, therefore, peculiarly liable to show it, and those groups where opposition is well balanced and where the sets of muscles concerned lie close enough together for both to be brought readily into action by one stretching motion are the best suited to exhibit it. The opposition at the ankle is, in diagnostic examination of the act, supplied by the hand of the investigator. In rectus-clonus this is not needed.

A CASE OF CHOLESTEATOMA OF THE BRAIN.*

By

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Cholesteatoma is certain to be classed among the rarer neoplasms of the brain, hence the following case, which is remarkable also for the size and position of the tumor, has been thought worth recording, although it was first encountered by the writer upon the post-mortem table, and clinical history is lacking.

J. J., a friendless man, said to be thirty-three years old, was brought to the hospital on May 30, 1901, with a statement that a short time before he had been struck in the head and had since been apparently insane. He did not speak, appeared to be entirely demented, and had from time to time epileptiform convulsions until his death in status epilepticus on June 27. No record of any focal symptoms is obtainable.

Upon post-mortem examination the skull was found to be quite thin, but showed nowhere any trace of injury. The dura was not adherent. The brain appeared to bulge somewhat in the left frontal region. Upon removing the dura, in an area about one centimeter in diameter in the second left frontal convolution, a mass grayish white in color and somewhat lustrous, was noticed to be protruding immediately beneath the pia-arachnoid. Upon the inner surface of the left hemisphere, a mass in appearance much like cooked cauliflower, and having somewhat of a luster protruded, had pushed the corpus callosum downward, and had indented the convolutions of the opposite hemisphere. This protruding portion was about 4 cm. in diameter.

Upon further examination the tumor was found to be an extremely friable mass, which fell apart with great readiness.

*Specimen shown at a meeting of the Philadelphia Neurological Society, November 26, 1901.

It occupied the greater part of the frontal lobe, measuring, sagittally 8.5 cm., frontally 5.5 cm. and horizontally 3.7 cm., and was provided with a capsule. It arose from the body of the lateral ventricle and had extended into the frontal lobe. The portion next to the inner wall of the ventricle was firmer, laminated in structure, glistening white in color, and had a pearly luster. Portions of the mass crushed under a cover glass in salt solution, and examined microscopically, showed it to be made up of large flat polygonal and oval cells, most of

Photograph of the inner aspect of the left cerebral hemisphere, a portion of its surface being turned back to show the extent of the tumor (a).

them without a nucleus, cholesterin crystals, and fat globules with a fibrous stroma. It was impossible to obtain sections from the central portion of the mass, as the alcohol used in both paraffin and cellodin imbedding processes dissolved out the cells and cholesterin. A freezing apparatus was not at my disposal. From the internal portion of the tumor near its origin and including the capsule, some rather imperfect sections were secured. These stained by hematoxylin and eosin, by borax carmine and by Van Gieson's method, show what appear to be cornified epithelial cells, which tinge faintly at their edges, and have no nucleus, with a fibrous stroma. The capsule is composed of fibrous tissue, shows round cell infiltration, and in places some blood vessels filled with erythrocytes.

Sections through the brain axis and cord show nothing characteristic. There were congestion and slight broncho-pneumonia at the bases of the lungs, some increase of connective tissue in the liver, and slight interstitial nephritis.

The tumor is to all appearances a cholesteatoma. This diagnosis suggests itself on account of the color, the pearly luster, the consistence of the growth, its situation and its histological character as shown by examination of both fresh and stained specimens. That it had any more than an accidental connection with the blow on the head seems unlikely.

Cholesteatoma, first observed by Cruveilhier, and given its name by Johannes Muller, has formed the subject of a number of papers. Notable among these are those of Virchow, Beneke, Böstrom, and a quite recent one by J. J. Thomas. The balance of opinion seems to be in favor of the epithelial origin of these tumors, and the case here reported bears out this idea, as in it the tumor has apparently grown from the ependyma of the lateral ventricle.

The accompanying cut (from a photograph) represents the inner aspect of the left hemisphere, a portion of its surface being turned back to show the extent of the tumor mass.

A CASE OF PRIMARY DEGENERATION OF THE PYRAMIDAL TRACTS.*

By WILLIAM G. SPILLER, M.D.,

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FROM THE WILLIAM PEPPER LABORATORY OF CLINICAL MEDICINE,
PHEBE A. HEARST FOUNDATION.

Spastic spinal paralysis, lateral sclerosis, described separately by Charcot and Erb, has not an uniform pathological basis. Primary degeneration of the pyramidal tracts alone, *i.e.*, a degeneration confined to these tracts, and not resulting from a focal lesion, may occur, but certainly is very rare. The most recent paper on this subject with which I am familiar, is by Ida Democh², and she is able to refer only to the cases of Morgan and Dreschfeld³, and Dejerine and Sottas⁴. She reports a case that is complicated. She speaks of Morgan and Dreschfeld's case as being the least complicated in the literature, and yet some of the cell-bodies of the anterior horns of the spinal cord were diseased in this case. The examination of the tissues was made more than twenty years ago when the method of Nissl was not in vogue, and it is highly probable that could this method have been employed the nerve-cell bodies would have appeared more diseased than they did. The case seems to have been one of amyotrophic lateral sclerosis.

In Dejerine and Sottas' case the columns of Goll were not intact but the nerve cell-bodies of the anterior horns appeared to be normal, although the method of Nissl was not employed.

Ida Democh's case was complicated with neuritis from chronic alcoholic intoxication. The columns of Goll were degenerated in the cervical and upper thoracic regions. The

*Read before the Philadelphia Neurological Society, March 25, 1902.

nerve cell-bodies in the anterior horns of the spinal cord were not diminished in number, but apparently the Nissl method was not employed, so that we must remain in doubt whether these cell-bodies were perfectly normal or not. This omission is unfortunate, because in addition to the lateral sclerosis alcoholic neuritis probably existed, and there was therefore a double cause for cellular alteration in the spinal cord.

One of the most satisfactory cases yet reported is the case given in abstract recently by Strümpell⁸. This patient was 61 years old when first seen by Strümpell, and he was under his observation for almost fifteen years. The case was one of uncomplicated spastic spinal paralysis. The first signs of the disease began in 1866. The rigidity of the lower limbs developed gradually and became intense, and the tendon reflexes were much exaggerated. No fibrillary tremor and no trace of atrophy could be detected. The vesical and rectal functions were not affected. Sensation was normal until near death when some unimportant alteration of sensation was detected. The pyramidal tracts were degenerated, more in the lower thoracic and lumbar regions, and the degeneration did not extend above the pyramids. The columns of Goll were slightly degenerated in the cervical region. The nerve cell-bodies of the anterior horns were perfectly normal. It is presumable that they were examined by the method of Nissl, although the method of examination is not recorded in this abstract. The direct cerebellar tracts may have been slightly degenerated. Strümpell thinks that there can be no doubt that the spastic spinal paralysis from primary degeneration of, and confined to, the pyramidal tracts exists. The upper limbs are not affected in one form of this paralysis, and the disease may be hereditary. Another form is seen in more advanced life, and has a more rapid course, and all the limbs become spastic; finally, there may be slight atrophy of the muscles, so that this form cannot be sharply separated from amyotrophic lateral sclerosis. Two cases of the second type have been studied anatomically by Strümpell.

A third form occurs in childhood and may be hereditary. The pathology of this form has not been determined, except

in so far as shown by Bischoff's⁶ two cases in brothers, which are not altogether satisfactory. Bischoff found degeneration of the pyramidal tracts as high as the motor decussation, of the columns of Goll, of the direct cerebellar tracts and of the cell-bodies of the anterior horns of the cord and of the motor cortex. These cases cannot be regarded as uncomplicated either from a clinical or pathological viewpoint.

A few cases have been reported in which the primary degeneration of the pyramidal tracts was associated with degeneration of the direct cerebellar tracts, without alteration of the nerve cell-bodies.

My case reported in this paper, has resemblance to Strümpell's⁷, published in 1894, in which degeneration of the cell-bodies of the anterior horns existed, although muscular atrophy was not detected during the life of the patient.

A. G., a woman fifty years of age, was admitted to the Philadelphia Hospital, Feb. 26, 1901, complaining of loss of power in the lower limbs, and difficulty of speech. She was at first under the care of Dr. F. Savary Pearce, but later came into my service. The clinical notes, obtained at the time of her admission, were made by Dr. Pearce and the resident physician, Dr. Geisler.

Family history: Her father, mother and one brother were dead from unknown causes.

Personal history: She was the mother of three children, and had had one miscarriage since the birth of her last child. Three years before admission, while coming home from work, she became dizzy, but managed to reach her home without falling. She had not been feeling well for some time. A physician was called and by the time he reached the patient her left upper limb was powerless and she had lost the power of speech. She did not lose consciousness. In a day speech returned, but she has never been able to speak distinctly since the attack. She was able to move her left upper limb within two or three days, and she returned to her work after about three weeks, having recovered except that her speech was still indistinct.

About a year before admission, weakness of the lower limbs was noticed, and this weakness gradually increased in intensity so that she walked very little. Her memory had deteriorated.

On admission she was able to walk with difficulty, and her

gait was not distinctly spastic, and her steps were short. She swayed when standing erect, probably from weakness. Her speech was indistinct and bulbar in character.

She was a well-developed muscular woman. Her face was smooth and free from wrinkles below the forehead, but the forehead was wrinkled on both sides. When her mouth was opened it was drawn toward the right side. The naso-labial fold on the left side was not so distinct as on the right. The tongue was protruded straight, but the mouth was not widely opened. Both eyes could be closed. The irides reacted slowly to light and in accommodation. There was apparently no paralysis of the pterygoid, masseter and temporal muscles. There was no disturbance of deglutition.

The chest was well-developed and no atrophy was visible.

The left upper limb was moved freely but was weaker than the right, and the grip of the right hand was stronger than that of the left. There was no atrophy of the hands.

The lower limbs were moved freely, but were weak, and were not atrophied.

The reflexes were as follows :

| | RIGHT | LEFT |
|------------------|----------------------------|-----------------------------------|
| Biceps-jerk | Much increased. | Increased. |
| Triceps-jerk | Much increased. | Increased. |
| Flexors at wrist | Much increased. | Increased. |
| Extensors | Much increased. | Increased. |
| Von Bechterew's | Absent. | Absent. |
| Epigastric | Absent. | Absent. |
| Knee-jerk | Much increased. | Increased. |
| Quadriceps-jerk | Much increased. | Increased. |
| Achilles-jerk | Present. | Present. |
| Plantar reflex | Increased | Increased. |
| Babinski's | Extension of great toe. | Slight extension of great toe. |
| Ankle-clonus | Absent. | Absent. |
| Patellar clonus | Absent. | Absent. |

There were no disturbances of sensation, and stereognostic perception was normal.

She had been constipated and had noticed an increasing difficulty in retaining the urine for five months, but had not had absolute incontinence.

She had had dull headache over the whole of the head for one year, and occasionally had had pain in the left side of the face and in the back, but she had not had pains in the limbs.

On March 3, 1901, Dr. Charles A. Oliver examined her

eyes and reported: "Left pupil is the larger. The irides are extremely sluggish to light, particularly the left one; quite prompt to accommodation and convergent efforts. Paresis of left external rectus muscle. Eyegrounds are healthy."

An urinary examination made March 1, 1901, gave the following results: "Lemon color, sp. gr. 1011, reaction acid, sediment white; microscopical examination: pus and epithelial cells; chemical analysis: albumin, small amount; no sugar."

Another examination made July 8, 1901, showed granular casts and epithelial cells, and a large amount of albumin.

On July 3, 1901, the following notes were made by me: The patient is in a stuporous condition, although she replies to questions and moves her limbs on command. She permits the flies to collect on her face, and even on the inner side of the lips or within the mouth, without attempting to brush them away. She can give her name, but is unable to give her age, or to say how long she has been in the hospital. Her speech is thick. She has incontinence of urine and feces. She is paretic in the lower limbs, though she can move all the muscles of these limbs. The lower limbs are not atrophied and are flaccid.

In testing sensation no dependence can be placed on her statements, but she recognizes the point of a pin and withdraws either lower limb when it is stuck with a pin.

The knee-jerk on the right side is diminished, and is less intense than that on the left, which is also impaired. The Achilles-jerk on the right side is present, but feeble; on the left side it cannot be distinctly obtained. The plantar reflex is exceedingly active on each side, and the Babinski reflex is pronounced on each side. [A few days later the Babinski reflex was absent on each side, and no movement of the toes was obtained by irritation of the sole of the foot. The loss of this reflex was probably a result of the increasing stupor.]

She moves the upper limbs freely, and these limbs are not distinctly paretic. There is no distinct atrophy of the upper limbs. When the upper limbs are stuck with a pin she shows signs of discomfort.

The pupils are unequal, the left being larger than the right. The movements of the eyeballs seem to be free in all directions. The irides contract feebly to light; there is very little contraction in convergence. She closes the eyelids firmly. Both upper lids droop so that the palpebral fissures are narrow.

The heart sounds are very loud, and the first sound at the apex beat is suggestive of a murmur, the murmur however

is not transmitted into the axilla. The second pulmonic sound is somewhat accentuated.

The patient became progressively weaker, pulmonary and cardiac disturbance and fever developed, and she died July 10, 1901.

The pathological diagnosis made by Dr. W. F. Hendrickson, July 11, 1901, was: "Acute lobar pneumonia, chronic interstitial nephritis, hypertrophy and dilatation of heart, general arteriosclerosis, localized chronic pericarditis, chronic endocarditis, parenchymatous degeneration of myocardium, edema and congestion of lungs, early acute splenic tumor, parenchymatous degeneration of liver, chronic gastritis."

The brain and spinal cord were examined by me. Microscopical sections were made from the left paracentral lobule, the right cerebral peduncle, pons and lower parts of the central nervous system.

A slight recent hemorrhage was found within the cortex of the left paracentral lobule. The cell-bodies of this lobule could not be well studied by the thionin stain. No meningitis was found over this lobule, but the blood vessels of the pia at this part were slightly thickened.

The foot of the right cerebral peduncle was not degenerated either when studied by the Weigert hematoxylin or the Marchi stain. The right oculomotor nucleus contained many nerve cell-bodies and nerve fibers. A group of thickened blood vessels, surrounded by round-cell infiltration and the remains of an old hemorrhage, was found within the right cerebral peduncle near the oculomotor nuclei. No meningitis was found at the foot of the peduncle, and the blood vessels of the pia at this part were not much thickened.

The motor tracts within the pons were very slightly degenerated. The nucleus of each sixth nerve seemed to be normal. Very slight degeneration by the Marchi stain was found in the right pyramid, and none was found by this stain in the left pyramid. The cell-bodies of the nucleus of each twelfth nerve were shown to be deeply pigmented by the Marchi stain. The cell-bodies of these nuclei were numerous, but possibly not so numerous as in normal sections, and so far as could be determined by imperfect thionin staining they were not much diseased. The intramedullary portions of the twelfth nerves were normal. No meningitis was found over the medulla oblongata, and the vessels of the pia were not notably thickened. The anterior pyramids were slightly degenerated as shown by the Weigert hematoxylin stain, and the left pyramid was a little more degenerated than the right.

The degeneration of the pyramidal tracts in the spinal

cord, as shown by the Marchi method, was very slight, but when the Weigert hematoxylin stain was employed the crossed pyramidal tracts in the lower cervical and lumbar regions were found distinctly but by no means completely degenerated, and the degeneration was therefore of long standing. It was equal on the two sides of the cord. The direct cerebellar tracts were normal. The posterior columns were apparently intact. The direct pyramidal tract on the left side in the cervical region was slightly degenerated. The cell-bodies of the anterior horns in the lower cervical region were not so numerous as in normal sections, and some of these cell-bodies were diseased; *i.e.*, some were shrunken and had lost their chromophilic elements. The anterior roots of the lower cervical region appeared to be normal; except that some of the axones may have been slightly swollen.

In the lumbar region the cell-bodies of the anterior horns were not so numerous as in normal sections, and some of these cell-bodies were diseased in the same way as those of the cervical region. The anterior roots seemed to be normal.

Summary.—A woman fifty years of age developed suddenly weakness in her left upper limb with loss of speech. The power of speech was regained after a day or two, but never again was normal. The weakness almost entirely disappeared from the left upper limb after about three weeks. Two years after this attack she noticed that she was weak in her lower limbs, and the weakness gradually increased so that walking became difficult. The reflexes in all the extremities were exaggerated, and the Babinski reflex was obtained. The gait was not decidedly spastic. The right upper limb was not distinctly paretic, but the left was a little weak. No objective sensory disturbances were found, and no pains were felt in the limbs. Muscular atrophy was not observed, although the palsy of the lower limbs had existed more than a year. The reaction of the irides was sluggish. The left side of the face was slightly paretic, but the right side also probably was not normal.

Degeneration of the pyramidal tracts was found extending as high as the pons, but not above this. This degeneration was less intense in the anterior pyramids than in the spinal cord, and was equal on the two sides of the cord. The other tracts in the cord were normal. No meningitis was present.

Some of the small vessels of the cerebral pia were thickened, which in a person fifty years of age was not remarkable. The cell-bodies of the anterior horns of the spinal cord were in part diseased, and the nuclei of the hypoglossal nerves were probably not absolutely normal.

The attack of paralysis of the left upper limb probably with implication of the face, and with speech disturbances which developed two years before the other symptoms, cannot be satisfactorily explained by the findings. Amyotrophic lateral sclerosis does not usually begin in an apoplectiform manner. The degeneration of the pyramidal tracts extended equally high on the two sides, so that it is not probable that a focal lesion in the cerebrum was the cause of the degeneration in either tract; and no focal lesion could be found. A small hemorrhage in the brain may have occurred and caused the paralysis, but if so it did not lead to secondary degeneration. It seems not at all impossible that the sudden weakness of the left upper limb and of the left side of the face was the first sign of the amyotrophic lateral sclerosis, and that the weakness in the lower limbs developed so gradually that it caused little annoyance to the patient until a year or two later.

A case of amyotrophic lateral sclerosis with necropsy reported by Schlesinger⁹ has a resemblance to my case. A man, seventy-two years old, received a severe mental shock and his speech became at once affected. Soon after this a temporary right-sided hemiparesis developed. The mouth was opened with difficulty and deglutition was affected. To the symptoms of bulbar palsy were added progressive spastic paresis, without distinct atrophy of the extremities, and with exaggeration of the tendon reflexes. An acute commencement or rapid progression of bulbar palsy, according to Schlesinger, should always suggest the possibility of amyotrophic lateral sclerosis.

The paralysis in my case beginning in the lower limbs and not implicating the upper limbs, except the persisting slight paresis in the left upper limb, dating from the apoplectic attack, is unusual in amyotrophic lateral sclerosis, but has been

described as one of the signs of the spastic paralysis of Erb and Charcot from primary degeneration of the pyramidal tracts. The gait was not very spastic but it was weak and the tendon reflexes were exaggerated.

The absence of distinct muscular atrophy was one of the most interesting features of this case. The disease had existed more than a year, and therefore time for atrophy to develop had been given, and yet even in the lower limbs distinct atrophy was not observed. This is especially noteworthy, inasmuch as some of the cell-bodies of the anterior horns of the spinal cord were diseased. Had death been delayed atrophy might have been observed. It seems probable that the cellular changes developed later than the degeneration of the pyramidal tracts.

In the weakness of the lower limbs, the exaggerated reflexes without muscular atrophy, the gradual development of the paralysis—gradual because at the time of admission to the hospital the patient was still able to walk—the case presented the clinical picture of primary lateral sclerosis, and yet the microscopical examination showed that the cell-bodies of the anterior horns were implicated.

The slow reaction of the irides is not common in amyotrophic lateral sclerosis, but Schlesinger⁸ has observed the Argyll-Robertson phenomenon in this disease. The slow reaction in my case may have been caused by anteriosclerosis.

Amyotrophic lateral sclerosis is usually regarded as a rare disease, and yet within the last three or four years I have studied the pathological material from five cases of this affection, but only two of these cases have been reported. I have seen quite a large number of clinical cases within this period, so that I am inclined to think that amyotrophic lateral sclerosis is not so rare as many physicians believe. In association with Dr. Dercum⁹, and later in quite a long paper by myself¹⁰, I have discussed the symptomatology and pathology of this disease, and it is hardly worth while to repeat what has been said. In only one of the five cases was I able to trace degeneration above the pons, and in that case the degeneration of

the motor cortex was so intense that I believed that by the method of Marchi I might be able to define the extent of the cortical motor area, inasmuch as amyotrophic lateral sclerosis is essentially a disease of the motor system; an attempt which had never been made. This I was able to do, and I obtained a motor area corresponding quite closely to that described by von Monakow and others. The ascending frontal convolution was more degenerated than the ascending parietal, and this finding is especially interesting in connection with the recent results obtained by Schaffer¹¹ in his study of brains from cases of paretic dementia, and by Sherrington and Grünbaum¹² in their experiments on the brains of monkeys. These studies seem to show that the motor functions are represented in the ascending frontal convolution much more than in the ascending parietal convolution.

¹Ida Democh, *Archiv. f. Psychiatrie*, Vol. 33, No. 1, p. 188.

²Morgan and Dreschfeld, *British Med. Journal*, Jan. 29, 1881.

³Dejerine and Sottas, *Arch. de physiol. norm. et path.*, 1896, p. 630.

⁴Strümpell, *Neurologisches Centralblatt*, July 1, 1901, No. 13, p. 628.

⁵Bischoff, *Wiener klin. Woch.*, No. 51, Dec. 19, 1901, p. 1281.

⁶Strümpell, *Deutsche Zeitschrift f. Nervenheilkunde*, Vol. v, p. 225.

⁷Schlesinger, *Arbeiten aus dem Neurologischen Institute an der Wiener Universität*. Vol. vii, 1900.

⁸Dercum and Spiller, *JOURNAL OF NERVOUS AND MENTAL DISEASE*, Feb., 1899.

⁹Spiller, "Contributions from the William Pepper Laboratory of Clinical Medicine," 1900, and author's abstract in *JOURNAL OF NERVOUS AND MENTAL DISEASE*, March, 1900, p. 165.

¹⁰Schaffer, *Neurologisches Centralblatt*, No. 2, Jan. 16, 1902, p. 54.

¹¹Sherrington and Grünbaum, *British Medical Journal*, Vol. 2, 1901, p. 1091.

REPORT AS TO THE CONDITION OF A MAN THROUGH
WHOSE RIGHT CEREBRUM A BULLET PASSED FROM
BEFORE BACKWARD ELEVEN YEARS AGO.

BY THEODORE DILLER, M.D.,
PITTSBURG.

The case is that of a man, now aged twenty-four years. Eleven years ago a bullet entered just above the middle of his right eyebrow and made its exit 0.5 cm. to the left of the occipital protuberance. (Cicatrices of both wounds plainly visible now.) Unconsciousness at once ensued, during which state the surgeons removed (patient's statement) four or five ounces of brain substance and a large amount of bone between the wounds of entrance and exit. At the end of three weeks consciousness returned, but the patient was unable to utter a single word and was completely hemiplegic (left side). Speech returned at the end of four or five weeks. Motion returned to the leg slowly during two or three years; no improvement has taken place since.

In the accompanying photograph the heavy lines indicate the area of brain which is covered only by soft tissues, the bone being absent; and at the same time the situations of the longitudinal and Rolandic fissures are also roughly indicated by ink-marks. The skull depression measures 13 cm. in its greatest length and 7 cm. in its greatest breadth. It extends from a point about 0.5 cm. above the middle of the superior orbital margin to a point 2 cm. behind the parietal eminence, being somewhat the shape of a skillet with the handle directed anteriorly. The upper margin of the depression is 3.5 cm. below the median line of the skull. In the skull depression the brain pulsations may be plainly seen.

The man exhibits no mental defects. He walks readily without a cane although the left leg is quite spastic, and he, of course, limps. While the left leg is weaker than the right, it retains a large degree of power. All power of motion in the left hand and forearm is absent; but limited movements of the left shoulder can be made. There are marked contractures in the fingers of the left hand. There is a partial paralysis of the left face, scarcely noticable when the face is in repose.

All forms of sensation are greatly diminished everywhere over the left side, including face, tongue, conjunctival and nasal membrane, arm, trunk and leg. In the arm and hand all forms of sensation are entirely absent. Left hemianopsia is present. Of course the stereognostic sense is absent in the left hand.

The reflexes over the left side are much exaggerated, jaw-jerk, ankle-clonus, Babinski toe reflex and Bechterew's scapular reflex being present.

While the evidence afforded by this case is not exact, it still has a value in showing, in a rough way, the sensori-motor area of the cerebrum, especially as concerns the arm; and

the same time the area concerned in the mechanism of the stereognostic sense. The middle Rolandic and parietal regions were most involved; and it has been seen that sensation motion are absent in the arm. The superior and inferior Rolandic and parietal regions escaped largely; and we find a large degree of motion in the face and leg with a diminution of sensation only.

The hemianopsia may be due to destruction of the cuneus or to the fibers associating it with the primary optic tracts.

Aside from other considerations, the case is remarkable as showing the reparative processes of nature and the extent of injury which the brain may tolerate.

REPORT OF A CASE OF FRACTURE OF THE BASE OF THE
SKULL FOLLOWED BY MENINGITIS AND ORGANIC
HEMIPLEGIA, ASSOCIATED WITH COMA AND CAT-
ALEPSY LASTING EIGHTEEN MONTHS.

BY ARTHUR CONKLIN BRUSH, M.D.,
NEUROLOGIST TO THE KINGS COUNTY, BROOKLYN EYE AND EAR, AND
WILLIAMSBURG HOSPITALS.

This patient was nineteen years of age, born in Scotland and resided there for eighteen years. He is an only child, his mother is living and in good health, and his father died during his infancy of typhoid fever. As far as can be ascertained there is no neurotic taint in his ancestry. Previous to Oct. 26, 1896, he had always enjoyed good health, and was a strong and vigorous young man of good mental ability and exemplary habits. On that date he was assaulted by three men, thrown violently backward to the pavement, and kicked about the body and limbs. During the next three days he remained in a weak condition, crying and trembling, and gradually growing more dazed and stupid, while during the same period blood escaped from the mouth; and at the end of that period he passed into the condition in which he was when I first saw him in consultation with Dr. W. L. Rickard. I found the patient in bed. He had the color and development of a healthy and vigorous young man. There was a swollen and tender spot over the occiput. The head was turned to the left, but free voluntary movements occurred at times. The eyeballs were directed forward and moved freely. The right forearm was flexed across the chest with the fingers of the right hand extended and the thumb flexed across the palm. The right lower limb was straight and the left flexed so that the foot rested on the opposite calf. Occasionally, and especially when he was disturbed, very violent movements would occur in the limbs of the left side; and at the same time he would shout, "They are strangling me, they are killing me, they are murdering me;" but he did not give any evidence of being conscious of his surroundings. At times he would place his left hand to his head and contract his brows. There was a constant fine tremor of the arms, most marked on the left side. No voluntary movements occurred on the right side, and the limbs and chest of that side were rendered immovable by tonic spasm of the muscles. All the

reflexes were absent. Sensation was somewhat increased over the right side of the body and in the right limbs.

The spine was rigid from tonic spasm of its muscles, and there was tenderness on pressure over the cervical and first two dorsal spines. The pupils were contracted, unequal and irresponsive to light. The pulse, respiration and temperature were normal, but the heart's action was extremely violent. The urine and feces were passed involuntarily.

Until December 14, 1896, he remained about the same, at times quiet, at other times muttering to himself or grinding his teeth, and he had the same violent outbreaks. The tremor disappeared from his arms, the pupils became dilated, the eyeballs directed upward and to the left. Several attacks of projectile vomiting occurred, and he developed an anesthesia of the left half of the body and face and hyperesthesia of the right. His pulse, temperature and respiration gradually rose above the normal. On December 14 a profuse watery discharge came from the left ear, he was restless and noisy, the pupils were contracted, he had a number of brief convulsions on the left side, and there was a soft ecchymotic swelling, extending in a crescentic manner from the left mastoid over the occiput. Three days later he had four general epileptic convulsions. He remained in this condition until December 26, 1896, except that he gradually lost flesh and color, and developed a small bed sore over the sacrum. The pulse became more rapid and his fever higher. He was now pronouncedly comatose, and repeated general convulsions occurred. On December 26 signs of fluid were discovered in his left chest. The right arm and leg were now found to be markedly cataleptic and remained in any position they were placed until the patient showed signs of exhaustion. Until August 20, 1897, he remained in about the same condition, except that his heart became much dilated; general cyanosis became evident; he had several attacks of cardiac syncope; fluid was removed from the left chest several times, and the spine became movable and cataleptic. After that date no more violent outbreaks occurred, and on March 17, 1898, the limbs of the left side were found to be in a state of tonic spasm so that they returned at once to their habitual position when disturbed.

On May 2, 1898, the date of a civil action for damages against the City of New York, his condition was as follows: Coma was profound, the head was turned to the left and moved with difficulty, the eyes were closed, the eyeballs were directed upward and to the left, the pupils were dilated and irresponsive to light, and no voluntary movements of the limbs on the right side occurred, and these limbs and the

spine were cataleptic. The left hand habitually rested on the forehead and the left foot on the right calf. The left limbs were rigid and returned at once to their former position when disturbed. Coarse tremors occurred at times on the left side. There was marked atrophy of the muscles of the left chest and of the front of the right thigh. There was hyperesthesia of the right half of the body and face and anesthesia on the left. The surface temperature was one degree less on the right side of the body than on the left. The temperature was 100. The pulse varied from 120 to 150 and the respirations from 40 to 60. The heart was very much dilated. The upper part of the dorsal spine was curved forward and to the left. The skin was cyanotic and cold. The urine and feces were passed involuntarily. During all this time the patient had been nourished by the tube.

During the latter part of May, 1898, it was noticed that vigorous irritation produced a momentary direction of the eyes forward, contraction of the brows, and grinding of the teeth. The cataleptic condition and spasm now slowly disappeared, leaving a flaccid paralysis of the right side of the body and neck with absence of reflexes. Sensation also became normal.

On August 12, 1898 a powerful faradic current was applied by means of the wire brush and after a few minutes in which there were violent movements of the left limbs, he began to utter inarticulate cries and then commenced to shout: "Let me go and take me out." He was now found to be completely blind in the left eye, and with only a faint perception of light in the right, and totally deaf in the left ear and nearly so in the right. He then said that he had been for hundreds of years in a place too horrible to describe, and where he had been constantly tormented by the employees of the Bureau of Incumbrances. He has never given any evidences of any knowledge of the facts which transpired during his sickness. Since that time he has developed an atrophic right hemiplegia, with flexor contracture and loss of deep reflexes. The spine still remained curved. He is totally blind from a double optic atrophy; and can only hear by means of the ear trumpet placed in the left ear. The heart is dilated and the left lung bound down by adhesions. At times he is excited and confused while at other times he is dazed and stupid.

NEW YORK NEUROLOGICAL SOCIETY.

January 7, 1902.

The President, Dr. Joseph Collins, in the chair.

Myasthenia Gravis Pseudoparalytica.—Dr. Frederick Peterson presented a woman, thirty-eight years of age, the mother of two children, who had been first seen by him in October, 1900. She had been sent to him by Dr. Knapp, of Mount Vernon. For several weeks a difficulty in speech had been noted and also some dysphagia, the condition resembling, to a certain degree, bulbar paralysis. There was no history of specific disease or of intemperance. She had no pain, not even headache. Examination showed some weakening of one side of the mouth, slight deviation of the tongue to the right, and a very peculiar manner of speech, a dysarthria that had no real resemblance to that of bulbar palsy, general paresis, multiple sclerosis or any of the common types of difficulty in speaking. It seemed almost as if it were assumed, or as if it were hysterical simulation. There was no atrophy of the lips or tongue, and no actual paralysis of any of the muscles, including those of the throat. The gait was an imitation of a spastic gait, but was without spasticity. She was anemic, very weak, and with a weak pulse and heart. The pupils reacted normally. The knee-jerks were rather subtypical. There was no weakness of the eyelids, such as the ptosis described in many cases. She was pregnant, and in March, 1901, gave birth to a normal child. She was seen again in May and in November, 1901. The condition of pseudo-spastic gait and pseudo-bulbar dysarthria remained unchanged at both of these examinations. There was quick exhaustion in mastication, speech, swallowing, walking, etc. This disease, the speaker said, was sometimes known as asthenic bulbar paralysis, asthenic paralysis, bulbar paralysis without anatomical lesion, or *myasthenia gravis pseudo-paralytica*, and had been described by Erb, Oppenheim, Hoppe and many others. The symptom-complex in typical cases consisted of dysarthria, dysphagia and masticatory weakness, with corresponding paresis of the labial, glossal, palatal and masticatory muscles. The paresis might affect the upper facial muscles and those of the extremities. There was no atrophy and no signs of degenerative reaction. The sensorium remained free. The disease fluctuated from time to time as regards the severity of the symptoms. The sphincters and reflexes were not appreciably affected. The course might be periodic, acute, subacute or chronic. The prognosis was unfavorable, though patients had recovered. Several autopsies had been made with negative findings.

Dr. B. Sachs said that he had seen only one other case. In the one just presented, the clinical picture was so distinct that there could hardly be any doubt about the diagnosis. Evidently the cases were very rare, for they were not of a nature to be readily overlooked.

Dr. Joseph Collins said that he was under the impression that the case under discussion would eventually become an atypical one of

glosso-labial pharyngeal palsy. There was nothing in the case which reminded him of the cases of asthenic bulbar paralysis that he had seen. He would not include under asthenic bulbar paralysis any patient who presented the symptom-complex of a spastic parietic condition. It was entirely opposed to present knowledge of the disease to find exaggerated knee-jerks and tendon-jerks, and for this reason he would rule out the present case from the category of true asthenic bulbar paralysis. Moreover, the woman seemed to be developing some atrophy of the lips. The first case of asthenic bulbar paralysis described in this country was the one that he had long had under observation. That woman found that while she could chew one or two mouthfuls, she could not continue to do this. The same was true of muscular acts in general; there would be sudden evidence of exhaustion. Having gone through two or three critical periods characterized principally by the phenomena of surgical shock, she had practically recovered completely, inasmuch as there were no active symptoms of exhaustion present. Her facial muscles, though presenting no evidence of atrophy, still did not respond energetically to conscious stimuli, and the gait was a somewhat shuffling one.

Dr. Peterson said that his first impression was that this was a case of true bulbar palsy, but in the year and a half which had elapsed since his first examination there had been no true atrophy of the face, and no true spastic condition. The knee-jerks were active, but not exaggerated, and there was certainly no ankle-clonus. It was very easy to demonstrate the presence of muscle exhaustion. It was, of course, possible that later the case might present the evidence of true bulbar palsy, but certainly it did not do so at present.

A Case of Morphea.—Dr. J. Fraenkel presented a young woman, thirty years of age, an artist by occupation. The family history was negative, and she had been well with the exception of a severe attack of malaria eight years ago. About five years ago blotches began to form along the course of the sciatic nerve, and were at first tender, but subsequently underwent atrophy. When first seen by the speaker the examination of the nervous system was practically negative, but there were areas of atrophy of the skin. She had improved considerably since first coming under his observation on January 29, 1901. His diagnosis was morphea or disseminated scleroderma.

Report of a Case of Spinal Cord Tumor Successfully Operated Upon.—Dr. Robert Abbe made this report. The patient was an athletic man, thirty-two years of age, who had been first seen in April, 1900. He had been well up to three years before, when after a fatiguing game of golf he was seized with pain between the shoulders. This pain disappeared within a few days. Subsequently he noticed that the fingers began to be numb and became flexed. Then the legs and arms became similarly affected. Dr. Dana prescribed large doses of iodide of potassium, thinking the case one of spinal cord tumor. Various consultants saw the case, but the patient became suddenly worse. When seen by Dr. Abbe, the fingers were tightly flexed into the palm. On April 30, 1900, Dr. Abbe operated upon the spine, removing the laminae of the fifth, sixth and seventh cervical, and the first, second and third dorsal vertebrae. A thin layer of a whitish substance was found bulging backward, and on cutting into it a dark tumor was revealed, which measured two inches in length and was attached to the anterior wall of the canal. On removing the tumor, the hemorrhage was not severe. Convalescence was uneventful. Some of the muscular and sensory conditions were improved. Dr. F. C. Wood, the pathologist of the hospital, reported that the tumor was a sarcoma of the spinal cord.

Dr. C. L. Dana's report of this case was also read. The symptoms began, this report stated, in 1896. They did not progress much until March, 1898. He had been first seen by Dr. Dana in October, 1898. There was exaggeration of the deep reflexes, ankle-clonus and wrist-clonus; there were occasional attacks of vertigo, and the man was particularly sensitive to cold. There was no distinct differentiation of cutaneous sensations, though the temperature sense was rather more disturbed than the other senses. Just prior to the operation by Dr. Abbe the following condition was noted: There was total paraplegia with the legs greatly contractured; the hand was in the position of ulnar paralysis; the reflexes were all exaggerated. The right arm showed anesthesia to all forms of sensation; the left arm showed no anesthesia. Apparently the disease began in the eighth cervical and first dorsal segments of the cord. While spinal tumor had been suspected from the first, Dr. Dana said that he had been inclined to believe that there was some meningeal complication. On the whole, the picture at this time was very much like that of hypertrophic pachymeningitis. The operation revealed no meningeal complication; only tumor of the cord and the consequences of pressure.

Dr. V. P. Gibney said that he had seen this patient on June 6, 1900, and had found complete paralysis of the lower extremities, associated with a high degree of spasm. The thighs were strongly flexed upon the abdomen, and the legs upon the thighs, so that the heels were pressed against the buttocks. On October 30, 1900, under gas and ether anesthesia, Dr. Gibney had divided fascia and muscles, about the hips, dividing the hamstrings and the Achilles tendon, and getting the limb into much better position. Plaster-of-Paris bandages were applied from the toes to the free ribs. A second operation was done on November 15, 1900, and by this still further correction was obtained. On January 3, 1901, all plaster dressings were removed, and posterior splints were employed in connection with traction. The spasm of the limbs grew less. On February 5, Dr. M. Allen Starr saw the case and made a diagnosis of complete degeneration of the cord. When the man was examined last fall it was found that the spasm was fast disappearing, and that there were few or no contractures about the joints. There was no evidence of recurrence of the tumor, and the result under the circumstances seemed to be all that could be expected.

Dr. B. Sachs said that he had reported about two years ago a case of sarcoma pressing upon the cauda equina which had been successfully operated upon. The diagnosis had been made from the area of pain, and from the fact that pressure upon a definite region just to the right of the spinous process of the second lumbar vertebra caused exactly the same pain as that of which the patient complained. The diagnosis was confirmed at the operation, the tumor presenting in the incision. It was extradural and was completely enucleated. The spinal cord had not been invaded. If there were any reason to suspect spinal tumor the operation should be done early. In the case just referred to, if the operation had been postponed even for a short time the cord would have been invaded and paraplegia would have been the result. The inclination of the neurologists to make a diagnosis of pachymeningitis did not seem surprising, and was to be explained by the length of the tumor. Even if the case were one of pachymeningitis he did not think any harm could be done by an exploratory laminectomy.

Dr. Abbe, in answer to questions, said that the tumor in the case he reported was intradural, that it started in the medullary tissue

and extended into the spinal canal, not into the vertebral canal, and distended the spinal cord.

Dr. Joseph Collins said that the neurologists had heretofore relied too largely upon pain in making a diagnosis of spinal cord tumor, although probably the majority of such tumors were associated with pain. He now had under observation a patient in whom the symptom-complex was an ataxic paraplegia, and he was beginning to think that the case was really one of sarcoma. Seven or eight years ago he had seen in the Hospital for Nervous Diseases a case that had been diagnosed as pachymeningitis, but some months later he had made the autopsy, and had found a tumor which could have been very easily removed by operation.

Scleroderma and Sclerodactylitis, with Some Remarks on Its Therapeutics.—Dr. B. Sachs read a paper with this title. He said that most neurologists seem disposed to accept the theory that this disease was an angio-tropho-neurosis, though many were inclined to look upon it as originally a nervous disorder. It was certainly not a purely spinal affection. There was a typical fascies of scleroderma, enabling one to make the diagnosis at first glance; he referred to the peculiarly thin nose, the hollow cheeks and the retracted lip. All sorts of therapeutic measures had been adopted without much benefit. Among the remedies which had proved of decided benefit in certain cases was thyroid extract. The first case reported by Dr. Sachs was that of a woman, fifty-four years of age, who had been first seen in November, 1891. The symptoms of scleroderma had developed four years previously. Many dermatologists had seen her and prescribed for her without the slightest change in the scleroderma. Thyroid extract was prescribed, and it benefited her so greatly that she continued its use without permission. When seen again some time afterward she was greatly emaciated, but all of the symptoms of scleroderma had disappeared. She was directed to stop the thyroid extract at once, and after a time to resume it, taking two grains three times a day. The speaker said that he had seen the patient again recently, and had found her perfectly well, though it was necessary to keep up small doses of the extract or the symptoms of scleroderma would return. The second case was that of a young woman of twenty-four, who had also been benefited by this treatment. A radiograph of this patient's hands was exhibited to show the attenuation of the bones. Another case was interesting in that the scleroderma followed an injury, the piercing of the hand by falling upon a letter file. Eight months after this injury the skin of the hands became hard, discolored and tense, and the condition was aggravated by cold weather. An X-ray picture showed no changes in the bony structures. There was such slight benefit from the thyroid extract that it was discontinued, and the man's condition remains at present unchanged.

Dr. E. B. Bronson said that a distinction should be made between simple idiopathic atrophy of the skin and scleroderma. Circumscribed atrophies of the skin occurred in various places, and although they might present a hardness it was very different from the hardness of scleroderma, because there was a thinning and an atrophy which was not present in scleroderma. Scleroderma was very frequently followed by atrophy, but atrophy was not an essential part of the disease. In the so-called diffuse form there was no change in the appearance of the skin in a typical case, and the change was noted only by the sense of touch. The cases reported in the paper were of the diffuse variety, but this class of cases could be conveniently divided into a limited and a universal form. The more or less lim-

ited diffuse form came on rather suddenly after an exposure to cold or after an injury, and at first the functions of the part and the appearance were not changed, but the sense of touch would enable the physician to at once recognise the existence of scleroderma. The generalized diffuse form sometimes followed exposure, but it was more commonly due to some central trouble. It was only after some atrophic changes had taken place that there was visible loss of substance. At the stage of maturity the face of such a person was not shrunken, according to his experience—in other words, the contour was not altered, but expression was entirely wanting. The circumscribed form of scleroderma was totally different, and was called by the English by the rather absurd name of morphea. Instead of being ill-defined at the margin, it was sharply limited, and was usually associated with a change of color, as a rule being darker than the surrounding skin. It often presented a lilac border. In this form there was simply a scleroderma without atrophy. In most of these cases recovery was spontaneous. Some years ago he had observed a peculiar case in which the diffuse form had been converted into the circumscribed variety or morphea.

Dr. Joseph Fraenkel said that he had seen altogether nine cases of scleroderma, and had become impressed with the idea that this term included several different conditions. There were three types, the circumscribed, the generalized and the secondary forms resulting from arteriosclerosis, chronic rheumatism, and very many other causes. An example of the secondary form was a case in which the patient suffered from myocarditis and angina pectoris. There finally developed along the inner aspect of the left arm a line of induration of the skin, which ultimately became atrophied. The only variety which seemed to yield readily to the thyroid extract was the circumscribed form.

Dr. B. Sachs said that the name scleroderma was rather unfortunate, because it was evident from the radiographs presented that other tissues beside the skin were affected, only the muscular tissue seeming to be exempt. The cases described by Dr. Bronson had probably been observed in the early or middle stages of the disease. A point of value in the diagnosis was the absolute immobility of the skin, the latter appearing to be glued to the part underneath. In cases he had used only the powdered thyroid gland, given in capsules, for, in previous years, he had found the extract entirely unreliable.

February 4, 1902.

The President, Dr. Joseph Collins, in the chair.

A Case of Monocular Exophthalmos.—Dr. J. Arthur Booth presented this case, and raised the question as to whether one were justified in making the diagnosis of Graves' disease. The patient was forty-seven years of age, and had never had any serious illness previously.

She had been well up to last fall, when she noticed a blurring of vision and a change in the appearance of the eye. There was no history of fright. The patient stated that three months ago the left eye was struck by the foot of an infant. Examination showed no enlargement of the thyroid; pulse 96; no decided tremor. Dr. David Webster found both fundi normal and the action of the eye muscles normal. There was retraction of the upper eyelid of the right eye and marked exophthalmos.

Dr. B. Sachs said that he had at present under treatment a married woman, about twenty-three years of age, who after pregnancy had developed unilateral exophthalmos. The case was identical with the present one except that the exophthalmos was on the other side. There was no goiter, and on coming under treatment the pulse was 132. Under treatment, consisting chiefly of rest in bed and the use of mild tonics, the pulse came down to 90, and was no longer intermittent, and the exophthalmos was slightly diminished. In addition, this patient presented the peculiar gastro-intestinal symptoms of Graves' disease, and, in the absence of any other serious disease he could only make the diagnosis of unilateral Graves' disease.

Dr. W. M. Leszynsky said that he had seen two similar cases. One occurred in a man who had exophthalmos, retraction of the upper eyelid and some tachycardia. In the course of six months the usual symptoms of Graves' disease developed, and the case ran the usual course. In the other case, there was unilateral exophthalmos and retraction of the upper eyelid with slight goiter, but without tachycardia. The case followed the usual course of Graves' disease. It did not seem to him unusual in the early stage of Graves' disease to find the exophthalmos only on one side.

Dr. J. Arthur Booth thought it was rather unusual for the eye to be alone affected in the beginning; more commonly there was some tachycardia as the first symptom.

A Case of Central Hematomyelia.—Dr. I. Abrahamson presented a man of forty years, a Russian tailor. The man had fallen and struck the back of his head on the floor some weeks previously. A week and a half later he noticed numbness of the little finger of one hand. Twenty-four hours after this the entire upper extremity was numb, and one day after this both lower extremities were numb and weak. On the fourth day of this trouble there was complete inability to move. The special senses were normal. There was extensive wasting of the muscles while the patient was in bed, although there was no fever. He recovered in a very short time. Examination showed the pupils equal and the ocular movements normal. There was a tremor of the facial musculature on one side; the tongue was drawn to the right; the reflexes of the upper extremity were exaggerated, especially the triceps. There was a marked flabbiness of the musculature and wasting, especially around the shoulders. The kneejerks and Achilles-jerks were exaggerated. There was no spasticity. The volume of the left lower extremity was much greater than that of the right. There was no limitation of the visual field, and no Romberg symptom. On rising from the chair it was necessary for him to assist himself with his hands.

Dr. Joseph Collins said that he had had this case under his observation, and the only diagnosis seemed to him to be a central hematomyelia with the cleavage in an upward direction. The comparatively mild traumatism, the rapid onset of the symptoms, the rapidity of the recovery and the widespread involvement all seemed to him to point to this diagnosis. About two weeks ago the abnormal condition had been much more marked than now. The patient had been having great difficulty in rising from a chair, and would sit down very suddenly. There were no objective sensory disturbances.

A Case of Cerebral Endarteritis, Probably Syphilitic.—Dr. W. M. Leszynsky presented a Hungarian woman, twenty-two years of age. There was no history of rheumatism, trauma or syphilis. Several times recently there had been transient paresis of the left arm and leg, and there had been some regurgitation of food. Shortly before

coming under his observation there was severe headache and vertigo associated with fever, and followed by marked ptosis of the left eye. Examination in August showed partial ptosis of the left eye with vertical diplopia. Only the left superior rectus muscle was affected. The vision in both eyes was normal. The fifth nerve was normal objectively. Innervation of the facial muscles was feeble on each side, and there was slight facial paralysis on the right side. The patient was treated with mercury and iodide, together with galvanism and the use of strychnia internally. In ten weeks the ptosis and diplopia had disappeared. Ptosis was then observed on the right side, and in three days became complete. The levator was the only muscle affected. The iodide of potassium was resumed, and in four weeks this muscle had almost completely recovered. On January 12, or one month later, ptosis was again seen on the left side. There was slight vertigo, but no diplopia. At times the patient was obliged to make several efforts at swallowing before succeeding. She still complained of left-sided headache, and after talking for some time she found it almost impossible to speak, but the ability to do so would return after a few minutes' rest. She was now receiving 28 grains of iodide three times a day. There was no history or evidence of syphilitic infection. The case seemed to be a peculiar instance of cerebral endarteritis, probably syphilitic. The iodide had very little effect in controlling the pain.

Cerebro-spinal Syphilis.—Dr. Leszynsky also presented a man, thirty-three years of age, a driver by occupation. He had been first seen by the speaker in November, 1899, and up to three months before that had been well. He then experienced numbness in the left side of the face with slight twitching of the facial muscles. Two months later there was diminished vision in the right eye with occasional diplopia. Four months after the numbness began, the first three molar teeth in the right upper jaw became so loose that they were removed with the fingers. He was the father of six healthy children. According to the history, he had many years ago contracted a chancre, but no marked secondary symptoms had appeared. The pupils were found to be markedly contracted and rigid. There was no anesthesia of the conjunctiva, and there was good vision in each eye. Both fundi were normal. The innervation of the facial muscles was normal and there was no tremor. Mercurial ointment and iodide of potassium were used at first, and later strychnia. Three months later the man complained of vertigo and diplopia, and was found to have complete paralysis of accommodation. At the end of two months he was much improved and disappeared from observation. After an absence of sixteen months he returned in August, 1901, and stated that fifteen months previously he had fallen through a hatchway, but had been only severely shaken up. In July, 1901, he was thrown to the ground by a man jumping upon his head from a height. On examination in August, there was found to be complete paralysis of all branches of the third nerve; both pupils were rigid, and the patient was blind in the right eye. He had advanced atrophy of both optic nerves. He had been taking iodide and strychnia in injections. In this case of cerebro-spinal syphilis the optic atrophy was apparently of a primary degenerative type. Strychnine was administered in gradually increasing doses up to the toxic effect, but it had no beneficial action, and this had been the speaker's uniform experience with it in these cases. The case was of forensic interest because the man was trying to substantiate a claim that the blindness had resulted from the traumatism to the head.

Dr. B. Sachs said that the diagnosis could only lie between cerebro-spinal syphilis and tabes, pure and simple. In the former, if the optic nerves were involved there would be a distinct optic neuritis. The important question was as to whether there had been a primary optic degeneration. According to the history, the case was probably one of cerebro-spinal syphilis. The first case also seemed to be one of cerebral syphilis, but he doubted if it were an example of syphilitic cerebral endarteritis; it was more than probable that there was thickening in patches of the meninges about the nerves as they emerge from the base of the brain.

Dr. Leszynsky said that on account of the transient character of the symptoms it seemed to him that they were, in all probability, due to some interference with the circulation. The temporary attacks of aphasia and difficulty in swallowing, and the trouble with the third nerve pointed to some interference with the nutrition of the nuclei. If this interference were with the nerve trunk itself it would be unlikely for the localized meningitis to select certain fibers of the nerve and interfere with the nuclear distribution. In the second case, both Achilles reflexes were present; there were no sensory symptoms—in short, nothing to indicate the presence of tabes.

Multiple Sclerosis (?).—Dr. I. Abrahamson presented two cases suggesting multiple sclerosis, though presenting other symptoms. The patients were seventeen and sixteen years old respectively, a sister and brother. Both parents were well. The children were born without instruments, but early showed an unsteady gait, slowness of speech and nystagmus. Both children exhibited pronounced stigmata of degeneration. On examination, the gait was unsteady, the pupils were equal, the ocular movements slow and jerky, and nystagmus was present in all positions. At times, the Babinski reflex was obtainable. There were no sensory disturbances. The speech was slow and monotonous, and there were marked mental defects of the nature of a mild dementia. The fact that these two children, together with another, all belonged to the same family, was a point against the diagnosis of multiple sclerosis.

Dr. C. L. Dana said that if these cases were not to be called multiple sclerosis he did not think it would be possible to make that diagnosis from the clinical picture.

Dr. Joseph Fraenkel said that he had seen the boy when he was brought to the Montefiore Hospital, and had made the diagnosis of multiple sclerosis, but after having watched the case further and obtained a complete history he had been in doubt about the correctness of this diagnosis. At the time of admission the spastic symptoms were very much more marked than at present.

Dr. Sachs said that family forms of multiple sclerosis had been described, yet they did not entirely correspond with the typical picture of multiple sclerosis. They resembled somewhat the Marie type, but he would not make that diagnosis. A progressive disease of this sort occurring in a family with dementia had been reported by one of the northern European writers.

Dr. Collins said that he would hesitate long before diagnosing these cases as multiple sclerosis for the reason that this was opposed to our conception of multiple sclerosis as a pathological entity. It was now looked upon as a disease of early adult life, of the nature of a late infection or organic neurosis. In the cases just presented there was, in all probability, a teratological condition. To account for the symptoms there would have to be a large sclerotic area of the poles of the anterior hemispheres, while the posterior

and middle parts would have to be almost free, as the special senses were well developed.

Dr. Dana said that as dementia paralytica could be associated with multiple sclerosis in adult life, it was possible that the defective mental development might exist in childhood.

Multiple Sclerosis.—Dr. J. Ramsay Hunt reported the case of a widow, fifty-three years of age, who had been admitted to the Montefiore Hospital, in October, 1886. At this time her disease had lasted for several years. Speech was slow and stammering. She had a spastico-ataxic gait, the Romberg symptom, slight weakness of upper extremities with ataxia, and considerable motor weakness of the lower extremities. The knee-jerks and ankle-jerks were present and lively on both sides, and the pupils were equal and active on both sides. There were no sensory disturbances and no rectal or bladder symptoms. The ophthalmoscope showed an atrophy. In January, 1899, it was found that she could neither walk nor stand; speech was stammering and syllabic; there was marked intention tremor in the upper extremities; nystagmus was present in all directions except downward. The motor power was defective in the upper extremities, and there was resistance to passive movements, especially in the legs. The right knee-jerk and left Achilles-jerk were absent. The plantar reflex was present on the right and absent on the left. On post-mortem examination, the anterior border of the calvarium showed a nodular eburnation. The fissures were widened. The stained tissues showed an increase of glial cells, and leucocytes in the gray matter. The cells showed distinct atrophic changes and were somewhat sclerosed. The meninges were thickened and infiltrated with round cells. In the cord were found disseminated plaques of sclerosis. Nowhere in the cord were any distinct signs of inflammation. The specimens from this case were exhibited under the microscope.

Discussion on the Absolute and Relative Frequency of Multiple Sclerosis.

—Dr. C. L. Dana said that among 3,000 private cases of which he had histories, there were only ten cases of multiple sclerosis. Out of about 600 cases at the outdoor clinic during the past year there were only two cases diagnosed as multiple sclerosis, and even these were questionable. In Bellevue Hospital itself 12,000 patients were received annually, and one of his assistants was constantly on the watch for cases of nervous disease, yet he had not found more than one or two new cases of multiple sclerosis each year. It was evident, then, that multiple sclerosis was very rare in private practice, and decidedly more rare than in the clinics of Europe. It was possible that we made mistakes in diagnosis in some cases of so-called acute or subacute transverse myelitis coming under observation as chronic transverse myelitis. Some of these cases would probably ultimately prove to be examples of multiple sclerosis, yet of those he had been able to follow for many years none had terminated in this way. Other cases of multiple sclerosis might have been recorded as ataxic paraplegia, though he did not make this diagnosis himself. He could call to mind four of these cases in which there was really a combined sclerosis due to some secondary anemia or toxemia. Then there were cases of sporadic forms of retrobulbar neuritis which perhaps develop later into multiple sclerosis. From his experience he was compelled to believe that multiple sclerosis must be more rare here than abroad, possibly owing to the better surroundings of the masses.

Dr. Graeme M. Hammond said that he had spent considerable time in examining the records of both private and dispensary practice. He had examined 3,000 private records, and 7,000 records from the clinic, extending over the past ten years. In the former there were 729, or about 25 per cent., with organic diseases. Of these cases, 15, or about 2 per cent., had multiple sclerosis. In the clinic cases there were 2,400 organic diseases, and of these 32 had multiple sclerosis, or 1.33 per cent. He could not agree that there was a greater percentage of multiple sclerosis cases in dispensary practice. Of the combined private and dispensary cases, 47 had multiple sclerosis, or 1.5 per cent.

Dr. Goodhart reported for Dr. M. Allen Starr, that he had examined 10,056 cases in the clinic, and had found 27 recorded as multiple sclerosis. In 6 of these the diagnosis was doubtful—in other words, there was one undoubted case in 475. Of the 4,809 males there was one case of undoubted multiple sclerosis in 437, while of the 4,898 females, there was one such case in 700. With regard to the age, the records showed that among the males there was only one occurring after the age of sixty, while among the females all developed the disease under thirty-one years of age, and the earliest case occurred at the age of sixteen months.

Dr. Sachs said that he had examined the records of 2,000 cases in private practice, and had found 13 undoubted cases of multiple sclerosis, and 2 questionable ones. There were 41 of tabes dorsalis, 69 of cerebro-spinal syphilis, 38 of general paresis, 14 of intracranial tumors, 15 of paralysis agitans, 37 of apoplexy and 15 of infantile cerebral palsy. He thought we had a faulty impression of the relative frequency of the disease in Europe. According to one of the latest European works, the author states that he had seen 5,500 private cases of nervous disease, and in this number had met with 38 cases of multiple sclerosis. This would give 1 in 144, whereas Dr. Sachs said his own experience gave 1 in 150. It was most important in considering such figures to know from what classes the material had been drawn. Many cases diagnosticated in this country for the time being as chronic myelitis, were diagnosticated in Europe as incipient cases of multiple sclerosis before the characteristic symptoms had developed. With regard to the differential diagnosis, the speaker said it was important to differentiate multiple sclerosis from multiple cerebro-spinal syphilis, and also from general paresis, particularly in the later stages. Multiple sclerosis usually began earlier than general paresis, and the latter was a much more progressive disorder, and the dementia was much more marked. In several cases of cerebral infantile palsy he had been in doubt as to whether there was multiple sclerosis present. There were some cases which had begun as multiple sclerosis and had gone over distinctly into paralysis agitans. He had seen two or three cases in which there was considerable doubt as to whether the correct diagnosis was neurasthenia or multiple sclerosis.

Dr. Leszynsky said that he had no statistics to present, but he would agree with the others that multiple sclerosis is comparatively rare in this country.

Dr. B. Onuf said that he had made the diagnosis of multiple sclerosis in a much larger proportion of cases than the others, for, he had seen in hospital between 500 and 600 cases, and had made the positive diagnosis of multiple sclerosis in 8 cases.

Dr. Edward D. Fisher sent a communication saying that in his

clinic at the University, during six years, he had seen out of a total of 2,451 cases of nervous disease, 8 cases of multiple sclerosis.

Dr. Collins said that in 1901, 1,470 cases of nervous disease had been seen at his clinic, and this number furnished 5 cases of multiple sclerosis. In 1900, 1,368 cases were seen, of which 5 were multiple sclerosis. In 1899, there were 1,400 cases and 5 of multiple sclerosis; in 1898 there were 1,270 cases with 3 of multiple sclerosis. Thus, in the four years the clinic had been under his personal direction there had been approximately 6,000 cases of nervous disease, with 19 cases of multiple sclerosis. During this period there had been 37 cases of locomotor ataxia, 29 of paralysis agitans. From 1890 to 1897 there were 28 cases of multiple sclerosis in a total of about 4,000 cases of nervous disease. He had notes of 8 cases of multiple sclerosis seen in the City Hospital, and not included in the previous figures. This hospital devoted about 75 beds to nervous disease, and in this service he had met with about one case of multiple sclerosis a year. In his private practice he had made the diagnosis of multiple sclerosis four times only. According to his own experience, therefore, multiple sclerosis is a very rare organic disease of the nervous system. He had found paralysis agitans one and a half times more frequent, and tabes dorsalis about twice as frequent as multiple sclerosis.

Dr. J. Fraenkel said that the statistics of the Montefiore Hospital conformed very closely to those already presented. Out of 2,100 patients at this institution during the past ten years, about half of them being cases of nervous disease, there had been only 18 cases of multiple sclerosis. He had been very conservative in making the diagnosis of multiple sclerosis in these cases. Out of about 160 cases of nervous disease at present under treatment there, about 35 were cases of tabes and 9 cases of multiple sclerosis.

PHILADELPHIA NEUROLOGICAL SOCIETY.

December 23d, 1901.

The President, Dr. James Tyson, in the Chair.

The Supra-orbital Reflex.—Dr. D. J. McCarthy referred to the recent papers on this reflex, and showed that this phenomenon described by him was a true reflex. It consists in a fibrillary tremor of the lower lid when the skin of the supra-orbital region is irritated.

Dr. William G. Spiller thought that Dr. McCarthy had the better of the contention that this is a true reflex. It is similar to the closure of the eyelids produced by touching the conjunctiva or the cornea, as this also is a reflex in the distribution of the fifth and seventh nerves. When one of these reflexes is lost, the other also should be lost, and as a matter of fact this seems to be so.

It would be interesting to know what would be the effect on Chvostek's sign from removal of the Gasserian ganglion. Some persons in normal health have a very active Chvostek sign. While this phenomenon may be due to irritation of the seventh nerve, it is possible that it might be lost if the centripetal impulses through the sensory fifth nerve were prevented.

Referring to a case reported by Dr. Keen and himself, Dr. Spiller said that he thought it the most perfect removal of the Gasserian ganglion he had seen. In many cases the ganglion has been removed intact, but in none has the motor root been left on the ganglion as in this specimen removed by Dr. Keen.

He also called attention to the condition of the eye in the two cases exhibited by Dr. McCarthy. In the case where the Gasserian ganglion was removed six years ago, the eye was much injected, whereas in the other where the ganglion was not removed, but the sensory root was cut, this injection was not present.

"Static Electricity in the Diagnosis and Treatment of Hysteroidal Disorders."—A paper with this title was read by Dr. G. Betton Massey.

The Treatment of Locomotor Ataxia.—This paper was read by Dr. J. K. Mitchell.

Dr. S. Weir Mitchell corroborated what had been said about the use of the bandage about the limb for the relief of pain. He called attention to a point on which much information could be obtained by organized movement. Many years ago he had collected some statistics on the subject of ataxic pains in connection with storms, and satisfied himself that the ataxic pain was due in a large number of instances to the coming on of storms more or less distant. He had unfortunately lost the portfolio in which this material was contained and since had not had the courage to again take up the subject. He believed that 96 per cent. of the neuralgias following trauma are due to storms. A collective investigation of the relation of ataxia to storms and of hemicrania to storms would result in a paper of great importance and material value.

Dr. Charles K. Mills stated that his experience with regard to rest and massage had been the same as that of the reader of the paper. He considered rest to be the most useful measure for the relief of symptoms of irritation in tabes, and also that massage was a

useful adjunct to rest. He had had no experience with the use of the bandage. For a number of years, he made use of electricity, especially in the form of the galvanic current to the spine, apparently with benefit for the relief of the irritative symptoms of this disease. In discussing the treatment of the symptoms of a disease like this, it must be borne in mind that the pains come and go, and stay a varying time without apparent cause; and also as pointed out by Dr. S. Weir Mitchell, that they are greatly influenced by changes in the weather.

He believed that certain drugs have some value in the relief of the pains of *tabes dorsalis*. For many years he had used hydrobromate of hyoscin for this purpose, but not especially to relieve the pain at the time of the attack. The long-continued use of this drug, in combination with rest and possibly with massage, will often relieve the active symptoms, and do something toward holding the disease in abeyance and even of bringing about some improvement. Of course, we never obtain cures in cases of real *tabes*. He referred to a patient who had had locomotor ataxia for about twenty-five years. The speaker first saw him twenty years ago. This man is the manager of a large business and during all this time has occupied this position. He has not developed ataxia to any extent although he has the sensory symptoms in a severe form. He has apparently been helped by insistence on periods of rest and the use of hyoscin hydrobromate.

Dr. F. X. Dercum agreed as to the value of rest and massage in locomotor ataxia. He suggested that it might be worth while to make trial of massive doses of strychnia as are used in *tic douloureux* with such excellent results. He had used strychnia in cases of tabetic pain with apparent benefit.

Dr. S. Weir Mitchell said that years ago he had used strychnia in very large doses without any very satisfactory results. With regard to rest, he was led to write his first paper on this subject by the observation of a case of ataxia where the patient met with a fracture of the thigh. While recovering from this, he broke the other thigh, and was kept in bed four months. As a result all of the pain disappeared. This patient also discovered that if he slept between blankets he had less pain than if he slept between sheets. Some years later, when the speaker was in Paris, Charcot said to him that he had tried the use of rest without any results. The reason for this was evident when the patients were examined. They were all miserable, broken-down French paupers in an advanced stage of the disease, and little could be hoped from any form of treatment.

Dr. Alfred Gordon said that Marie had recently published a paper reporting a number of cases in which excellent results had been obtained in the relief of the pains of locomotor ataxia by the use of salophen particularly where there was a rheumatic taint in the case. The speaker had used this remedy in a number of cases with excellent results.

Dr. G. Betton Massey said that with regard to the use of electricity in the symptomatic treatment of ataxia, he could corroborate the statement that the galvanic current was of less value than other forms. He had used static electricity, both spray and sparks for the relief of the pains in the legs. This had seemed to have some effect. He thought the use of the faradic current desirable, particularly if the pain were abdominal. There is no doubt that pain in the pelvic and abdominal viscera is greatly helped by long-continued applica-

tion of the faradic current, and for this purpose the fine wire, high-tension coil is best.

Dr. William G. Spiller referred to a case of tabes that he had seen some years ago. The patient had found that the pain was relieved by pressure with the fingers on the painful spots. Many now recognize that the tabetic pains may be made worse by changes in the weather.

With regard to the use of drugs for the relief of pain, he was indebted to Dr. Sinkler for the suggestion of the use of aluminium chloride. He had employed it with benefit in some cases.

Dr. Wharton Sinkler said that Gowers in his article on tabes speaks of the use of aluminium chloride for the treatment of the pains of ataxia, given in five to ten grain doses three times a day. The speaker had used it in half a dozen cases with marked relief in the majority. It seems to exert a distinct influence not only in tabes, but in other forms of spinal disease, for example in disseminated sclerosis. In two cases of the latter the pains were relieved.

Dr. John K. Mitchell said that he had not pretended to cover the whole subject of the treatment of tabes in his paper, but that he attached very little importance to the use of any drugs, with the exception of morphia in the very advanced stages, as compared with massage and rest.

The Sensory Segmental Area of the Umbilicus.—Dr. W. G. Spiller read a paper, showing that the umbilicus lies between the ninth and tenth thoracic segments.

Dr. D. J. McCarthy said that there had been much discussion as to whether or not the reflexes are lost after a complete section of the cord above the reflex arcs. The general fact is that in animals where there is no disease posterior to the point of section, the reflexes are retained after the animals have recovered from the acute effects of the operation. In a certain number of cases in the human being, the reflexes have been lost, but in these cases it is possible that changes may have occurred in the cord which would account for this.

Dr. Charles W. Burr said that some years ago he had under observation a case of fracture of the spine high up in the thoracic region. The day following the injury the knee-jerks were absent. He assumed that this was due to shock, but the man lived for many weeks, and the knee-jerks did not return. When the autopsy was made, it was found that the cord was injured not only at the seat of fracture, but also that it had been torn across at the lumbar swelling. In that case, he thought it fair to assume that the loss of the knee-jerks was due to the lesion in the lumbar swelling. In the experimental sections that he had seen, the final result was that the deeper reflexes were increased. In the few cases that he had observed in man where apparently there was total destruction of the cord high up, the knee-jerks were increased.

Dr. William G. Spiller said that much had been written in regard to the question of the loss of the knee-jerk from complete transverse lesions high up in the cord, but the matter was still undecided. Some have thought that this loss is the result of neuritis, and neuritis has been actually detected but not in all cases. It would be a mistake to suppose that in all cases where the knee-jerks are lost in complete transverse lesions high up in the cord, there is also a lesion lower down.

Remarks on Verbal Amnesia.—Dr. Alfred Gordon read a paper on this subject.

Dr. Charles K. Mills considered that this case was confirmatory of the view which he held—a view first advanced by Broadbent—that there was a separate region in the brain, contained within the zone of speech as he had delineated the zone of speech in his own work, and that lesion of this region will give rise to verbal amnesia of the type referred to by Dr. Gordon. He believed, therefore, that the zone of speech should be extended beyond the zone indicated in Dejerine's diagram, so as to include the midtemporal region of the cerebrum. He thought that one of his own cases, and one or two reported in Germany, went to prove that this naming or concept center is located in the midtemporal region. In his own case the evidence was not positive, on account of other complicating symptoms probably due to the extension of the lesion beyond this center. He saw many theoretical reasons, as well as reasons from reported cases, for believing in this. It seemed to him that the process through which the name is associated with the concept (which concept is derived ordinarily from various sources), should have a special representation. The great objection to this doctrine of a special region has been founded upon the numerous reported cases in which verbal amnesia has been present, and yet the lesion has been found in different localities. When, however, careful consideration is given to the questions which arise in connection with this subject, he thought that these objections fall to the ground. The case that would prove absolutely the existence of this center might be one like the one reported by Dr. Gordon. A case like this which on autopsy, showed a midtemporal lesion, with integrity of the visual, auditory and motor speech centers, would furnish the required proof.

Dr. D. J. McCarthy referred to a case which he had seen with Dr. Davisson, that of a young man eighteen years of age. He had previously enjoyed excellent health. For several months he had been using alcohol to excess. He was suddenly seized during an hysterical outbreak with inability to express himself either by writing or talking. This had lasted several days when Dr. McCarthy saw him. He was then completely aphasic, except for "yes" and "no," which he said properly, and the significance of which he fully appreciated. He could then answer questions by writing the answers, and these were all carefully given. He could read well and understand what was said to him. He was hemianesthetic, and had submammary and inguinal tenderness, with spots of exquisite tenderness along the spine. The aphasia suddenly disappeared several days later. The speaker considered it a case of hysterical motor aphasia.

Dr. Alfred Gordon said that there were cases reported where the symptom, verbal amnesia, was so striking that one could not help thinking of something special for that psychic function. The question of memory is a very interesting one, and in this connection he referred to a case reported a short time ago in which there was loss of topographical memory. The patient knew the location of certain prominent buildings in Paris, but he could not place them in relation to each other. At the autopsy in this case there was found softening in the lower temporal region. He suggested the importance of taking up the subject of memory more closely.

Gelatinous Exudates in the Cerebral Ventricles.—Dr. C. Van Epps and Dr. D. J. McCarthy showed two specimens of these exudates.

Periscope.

Beiträge zur psychiatrischen Klinik.

(1902. Vol. 1, No. 1, January.)

1. The Further Development of Scientific Psychiatry. R. SOMMER.
2. The Diagnosis and Surgical Treatment of Hydrocephalus Internus and Cerebellar Tumors. R. SOMMER.
3. The Influence of Alcohol on the Motor Functions of Man. A. ALLEN.

1. *Development of Scientific Psychiatry.*—The author (the editor of the *Beiträge*) makes a plea for the exact analytical study of single cases and single symptoms (tremor, convulsions, etc.) by the methods outlined by him in his "Lehrbuch der psychopathologischen Untersuchungsmethoden," and implies his allegiance to the methods of Wundt as represented in psychiatry by Kräpelin. He believes that for the solution of psychiatric problems the concerted action of different institutions is desirable so that different hospitals may work together by the same methods on the same problems.

2. *Hydrocephalus Internus and Cerebellar Tumors.*—Many cases of idiocy are not congenital in origin, but are the result of definite brain disease, either during embryonal development or during the first years of life. The rational procedure is, therefore, the treatment of this disease and not the symptom (idiocy). If this were done the author believes many cases could be greatly benefited. Hydrocephalus internus is also only a symptom, and the various surgical procedures of lumbar puncture, puncture of ventricle, are only for the purpose of removing the accumulation of fluid and do not get at the seat of the trouble. With these ideas in view and for the purpose of determining the true cause of the hydrocephalus the author takes up the analysis of a case. The case presented symptoms pointing to cerebellar tumor. An exploratory operation did not reveal the tumor, but considerable fluid was removed. The patient died the following day. Section disclosed a sarcoma of the cerebellum which by pressure on the vena Galeni produced the hydrocephalus. The author calls attention to the danger of shock and collapse from too sudden removal of pressure from the medulla, and to prevent this advises that the operation be done in two stages. (1) Opening of the posterior cranial fossa. (2) Removal of the tumor. The second operation should be done some days after the first, and after the brain has had time to adapt itself to the new mechanical conditions brought about by the opening in the skull. In cases where there is marked hydrocephalus from obstruction to the blood-flow in the vena Galeni these procedures should be preceded by lumbar puncture with a view to gradually reestablishing normal circulatory conditions.

3. *Alcohol and Motor Functions.*—This article concerns itself only with the involuntary motor phenomena produced by alcohol. The phenomena studied are tremor of the fingers—by means of the three dimensional tremor apparatus—and the patellar reflex, by means of the reflex multiplier. (Both instruments are described in Som-

mer's "Lehrbuch der psychopathologischen Untersuchungsmethoden.") After an exhaustive study and analysis of the curves produced by tremor of the fingers as recorded by the kymograph in the three different directions—sagittal, transverse, vertical, he concludes in the main that as compared with similar curves taken before alcohol was ingested that they show the tremor produced by alcohol is finer; the coarsest oscillations are most numerous transversely; these oscillations became during the research gradually longer and more nearly alike; continuation of effects one-half hour after end of experiments. The patellar reflex was studied in the same case, and at the same time. An analysis of the curves produced shows in the main that alcohol produced a change in the height as well as the form of the curve. This change began after the first ingestion of alcohol. After the ingestion of 100.44 gms. alcohol a sudden removal of cerebral inhibition is shown. The height of the first stroke is liable to fluctuation; continuation of reflex irritability one-half hour after end of experiments. W. A. WHITE (Binghamton, N. Y.).

The Journal of Mental Science.

(1902, Vol. 48, January.)

1. Some Cases of Pellagrous Insanity. JOHN WARNOCK.
2. Note on the Prefrontal Lobes and the Localization of Mental Functions. P. W. MACDONALD.
3. Female Criminal Lunatics. A Sketch. JOHN BAKER.
4. Crime in General Paralysis. W. C. SULLIVAN.
5. Notes on Hallucinations. CONNOLLY NORMAN.
6. Clinical Notes and Cases. Unilateral Hallucinations of Hearing Chiefly Musical, A. ROBERTSON. Degeneration of Optic Thalamus, J. B. BLACHFORD. Lipoma of Brain, ADELE DE STEIGER. Epilepsy following Traumatic Lesion of Prefrontal Lobe, A. R. URQUHART and W. FORD ROBERTSON.

1. *Pellagrous Insanity.*—For the past five years 141 cases of pellagra have been admitted to the Cairo Asylum, Egypt. Most of these come from the country districts in marked distinction to the types of disease coming from the towns, namely, general paresis and hash-eesh insanity. The usual symptoms observed are those of melancholia, which soon passes into dementia; later on there is great emaciation and anemia with paresis of the lower limbs, intermittent diarrhea, and a prolonged state of prostration, which precedes the fatal collapse. The great anemia is contributed to by the ever-present intestinal parasites. Most of the patients come late, some time after the skin lesions are manifest. The patellar reflexes were usually much increased in force, although in five of the forty-five patients they were absent. Paretic gait is marked. The mental condition on admission is one of melancholia. Hallucinations of taste and smell are more frequent than those of the other senses. Dementia progresses rapidly. The author believes this type characteristic; the melancholia being so much in contrast to the maniacal forms of insanity prevailing among the Arabs, that whenever an Arab fellow is melancholic the suspicion is raised that he may have pellagra and search is made for the signs of the disease. One type of pellagrous insanity is worthy of special attention. In lieu of melancholic ideas the patient develops expanded notions of himself. In many instances the differential diagnosis between it and general paresis is somewhat difficult. Several histories with illustrations are appended.

2. *Prefrontal Lobes and Localization of Mental Function.*—The note

describes the general brain morphology of a congenital imbecile of sixty years of age, with a fairly well-formed head, short stumpy limbs, who had from birth a primary spastic paraplegia. He could not read or write, but could mutter words and had a general understanding of his surroundings. The brain showed absence of the superior longitudinal fissure in the region of the frontal and the anterior part of the parietal regions, the lobes being continuous. There is also a marked lack of development of the frontal lobes. The author, in discussing the recently-mooted question as to the functions of the occipital lobes and intellectual power, refers to the autopsy records of the idiots and imbeciles who died in the Dorchester Asylum from 1883-1901. Of the total of forty, in twenty-five the brain showed no marked deficiencies, but much irregularity in convolutions; twelve showed marked irregularity with arrested development in the frontal lobes; in two the occipital lobes were small and defective, and in one instance both prefrontal and occipital lobes showed defective development and irregularity. The general evidence, he believes, favors the supposition that the higher intellectual faculties have their chief localization in the prefrontal lobes.

3. *Female Criminal Lunatics*.—The author distinguishes two classes: the one consisting of those persons who have been found guilty of certain crimes or misdemeanors, but who have been acquitted on the plea that they were insane at the time such acts were committed; and a second class consisting of convicts and felons who, during their sentence of imprisonment, display symptoms of mental derangement and are transferred to Broadmoor. These are the lunatic criminals in contradistinction to the former class, the criminal lunatics. In the early days of the asylum these two classes were represented by equal numbers, but now the lunatic criminals form a small percentage of the whole. Although few in number, about one-third, they are very much in evidence. Fifty-five per cent. of these women were under thirty years; forty-five per cent. had reached middle life, and five per cent. were old women. In nearly one-fourth of the younger criminals congenital defects were noted; in eighteen per cent. a history of previous attack was ascertained; a limited number suffered from epilepsy and general paresis. The type of insanity most common is delusional mania. Infanticides constitute the bulk of the population at Broadmoor. The records there show that 253 women killed their children; 3 attempts were made in 53 other instances; thus giving a total of 286. It is not vice that kills these children in the puerperally insane woman, but a morbid and mistaken solicitude; they plead that the child will be happier in heaven.

The gestation insanities are here divided into the insanities of pregnancy, showing 5 per cent. of infanticides; the insanity of the puerperium, showing thirty-five per cent., and the insanity of lactation, showing sixty per cent. The insanity of pregnancy is more often accompanied by intense mental depression which sometimes deepens into true melancholia. In all but two of the cases here recorded the insanity was developed and the infanticide committed during the later months of pregnancy. The age limits of the text-books are not confirmed by the author's observations. There seems to be no law of age. The author regards those cases as puerperal insanity which develop within two months of parturition, although this is purely arbitrary as the mental causes are at work insidiously for weeks and months and finally culminate in a tragedy during the lactational period. Of twenty instances of infanticide of the newly born,

sixteen occurred in unmarried mothers. After months of concealment and denial, the cry of the child awakens a temporary frenzy and the deed is committed. Of the cases that occur in the puerperal period, within two months of parturition, sixty-four are recorded. Most of these showed distinct melancholia.

Infanticide is far more frequent after the first two months after parturition, during the so-called insanity of lactation, which insanity is probably due to the exhausting nature of this process. Depression is followed by an obsession, then a delusion, and the thought of suicide follows. She cannot leave her child behind, it must be sacrificed first; the dreadful thought is banished again and again until it dominates the woman and the deed is done. These tragedies are frequently preventable and the woman's gradually-increasing mental aberration is sufficiently distinct to sound the note of warning to the friend. Religious ideas, oftener than any others, color the obsessions. Of this class there were 115 and were mostly in older women. Multiparous were in the majority. The author gives further an interesting series of comparisons of brain weights tending to show that those in homicidal female lunatics were below the normal standard of sane women, and that the brain weights of lunatic criminals, the thieves and fire-raisers, were still more deficient in this respect.

4. *Crime in General Paralysis.*—W. C. Sullivan, Deputy Medical Officer in the Pentonville prison, continues his inquiries into the causes of crime by a study of the outrages committed by those developing or having developed, general paresis. Crime in the general paralytic is held to be distinctly different from the conduct of the alcoholic or senile dement. Crimes of acquisitiveness are the most common; assaults, next; sexual offenses, third. Crimes of acquisitiveness are extremely common. Petty larceny seems the most frequent, but frauds, embezzlement, and others are not uncommon. The circumstances and the execution of the offense often show a characteristic silliness. Such crimes are more prone to be performed by optimistic paralytics and not by those with the melancholic form of the disease. Paralytics are extremely amenable to criminal suggestion, a point of great medico-legal importance. Suicide is not a common form of crime among paralytics, but if found it seems to be an early symptom, a last act of reason as it were, the patients perhaps recognizing their cerebral incapacity and fearing for the future. In the later stages, suicidal attempts are rare, and practically occur only in the melancholic types of the disease. Homicide is also rare, and seems to follow much the same lines as suicide. Opposition to the expansive moods of the paralytic seems the inciting cause. Suggestion is here an important feature. The author believes that the large majority of grave acts of violence depend on a primary homicidal impulse and are related to more or less persistent states of emotional depression. Sexual crimes are especially common in the early stages of the optimistic attitudes and are associated with the marked genital irritation. The author then gives a careful and acute analysis of the underlying psychological processes which determine the different kinds of criminal acts. These cannot be abstracted to advantage.

5. *Notes on Hallucinations.*—Dr. Conolly Norman gives a detailed history of one case of marked hallucinatory insanity and presents a series of minute observations concerning the various sense organs.

JELLIFFE.

Neurologisches Centralblatt.

(1902. No. 4.)

1. Exhaustion of the Knee-jerk, and the Diagnostic Significance of this Symptom in Nervous Diseases. V. BECHTEREW.
2. The Trigeminal-facial (supraorbital) Reflex and the Westphal-Pilz Reflex. H. LUKÁČZ.
3. Further Contributions to the Babinski Reflex. H. HORNBERGER.
4. Further Study of Asthenic Paralysis with an Autopsy Report. S. GOLDFLAM.

1. *Exhaustion of Knee-jerk.*—Attention is called in this paper to a peculiarity of action of the knee-jerk in multiple neuritis, i.e., a slowing of the reaction, which gradually disappears as the neuritis disappears.

He also calls attention to the exhaustion of the knee-jerk in such diseases as (initial) tabes, myelitis, etc. The knee-jerk reacts to the first tap of the hammer, but rapidly disappears with each successive tap. If this exhaustion increases, it signifies an increasing lesion of the reflex arc; or the reverse if it decreases.

2. *Trigeminal-facial and Westphal-Pilz Reflex.*—Lukáčz gives a careful study of the supra-orbital reflex, described by the reviewer, and confirms his results in the study of the nature of this reflex. He says that he "can confirm the observation of McCarthy that the contraction of the orbicularis is absent after resection of the trigeminal nerve," and the absence also of this reflex in affections of the facial nerve. An associated reflex in the pupil corresponding to the Westphal-Pilz reaction is produced in eliciting the above supra-orbital reflex, and is coincident with it. At first there is, after the tap on the forehead, a momentary, slight narrowing of the pupil followed by dilatation. He is, therefore, of the opinion that the Westphal-Pilz phenomenon and the orbicularis phenomenon are true reflexes, and not associated or transmitted movements.

3. *The Babinski Reflex* was present in two cases of cerebral lesions within five minutes after the "insult." From a study of these cases and other cases reported in the literature, he arrives at the conclusion that "the isolated dorsal flexion of the great toe is a reflex which depends for its presence on an intact fiber tract, a deep motor tract from the thalamus to the spinal cord. If, therefore, the dorsal flexion of the great toe be present, and then disappear, it may be assumed that this tract is interfered with by a lesion of the thalamus or lower. If the Babinski reflex be present on both sides after a cerebral hemorrhage, it points to a rupture into ventricles.

D. J. MCCARTHY (Philadelphia).

Revue Neurologique.

(1902. Vol. 10, No. 2, January 30.)

1. Adiposa Dolorosa accompanied by Vasomotor Troubles and Sclerodermatitis. ODDO and CHASSY.
2. Treatment of Basedow's Disease by Intrathyroidal Injections of Iodoform Ether. J. ABADIE and CH. COLLON.
3. The Influence of Alcohol upon the Efficacy of Thyroid Extracts. LAD. HASKOVEC.

1. *Adiposa Dolorosa.*—The case is that of a woman of thirty-four years, unmarried, a woman of position and education, who had met with reverses and was obliged to teach. At this time she began to grow stout, though without painful symptoms. In March, 1901, the

patient felt fatigued and lost appetite. After a trip to Nice and return to a cold climate she had pain in her knee-joints and elbows, and they were also swollen without redness. Walking was difficult. A few days later there was redness on the front of the legs corresponding to the pretibial and submalleolar nodes. The articular pain diminished with rest, but the painful nodes increased in number, always in front of the tibia of both sides. The case was pronounced phlebitis, and the patient entered a hospital. At that time her hair was gray in spite of her youth, her thin hands, feet and face made a strong contrast with the rest of her body, which was very fat, especially about the thighs and upper arms; near the joint of the limb the flesh was very soft, elsewhere firm. The distribution of the fat was perfectly symmetrical. Sudden pains were felt in these masses of tissue, exaggerated by standing, by walking, or by pressure; pain was also worse where there were constrictions in the flesh. The trunk showed great size of the anterior abdominal wall, lumbar region, thorax and back. The nodes near the tibias were now very painful, red and finely varicose, and were not part of the surrounding adipose; these shortly increased in number. In the region of most dense adipose the skin modifications were notable—smooth, white, thickened and adherent with the cellular tissue. This scleroderma, very pronounced in the lower leg, grew less toward the thigh, but predominated where the fat had accumulated, though hardly appreciable on the trunk. The patient felt weak and could scarcely move. There was normal sensibility, except for a coldness in the feet. Reflexes were normal and there was no muscular atrophy, though muscular force had diminished. The patient was very depressed in spite of a formerly cheerful temperament; she cried frequently and seemed slightly unbalanced mentally. She grew slowly worse in all respects, locomotion being very difficult, both on account of adipose, muscular feebleness and the violent pain in the tissues and nodes. Urine had been very scanty and the following analysis was given: color, greenish yellow; density, 1.033; reaction, decidedly acid; urea, per litre, 16.52, with phosphates 4.49 and chlorides 5.85; albumin, glucose and urobilin absent, but biliary pigments present. Blood analysis: hemoglobin, 10 for 100; red corpuscles, 547,500, and white 4511 per cubic m.m.; the leucocyte formula was: lymphocytes, 20.33, mononuclear with contained lymphocytes 40.66, polynuclear 58.66, and eosinophile 1.33 for 100. The patient was subjected to thyroid medication, 50 cg. in two doses, morning and evening, and was kept quietly in bed during the first weeks of August. Medication was continued until the 14th, when there was still much pain and the urine was scarce, 50 cc. in twenty-four hours. The medication was slightly diminished, and on September 6 there was diminution in the patient's size, though the nodes were numerous still. For the violent pain in the limbs salicylate of methyl gave some relief. The patient returned home in late October, returning frequently for treatment. On November 12, the symptoms had all much decreased; pain was almost gone, she was brighter mentally, walked better and could even go up and down stairs with comparative ease. For the diagnosis of this case rheumatism was first suggested on account of difficulties with the joints and the rheumatic nodes. But the distribution of the fat, the phenomena of pain and the fact that the patient was a woman, prematurely old and mentally affected, determined the case as one of *adiposa dolorosa*. With this question settled, attention is given to the peculiarities of the case, the sclerodermitis and vasomotor troubles.

1. The sclerodermic aspect was most pronounced on the lower parts of leg and arm, with sharp bands above ankles and wrists; it was superimposed upon the adipose and ceased with it. This sclerodermatitis gave a very peculiar appearance to the skin, making it pearly and white of a glossy surface, at the same time that the pores, deprived of hairs and much distended, tended to make the surface look like that of an orange save for color. The cause for this was evidently trophic, as was that of the adipose; it emphasized the trophoneurotic nature of the case.

2. The vasomotor troubles were many and interesting. The nodes, characterized by slight redness with fine varicosity were present; second the cyanosis of the feet, emphasized when the patient stood; third, the dermographism, the cause of which was also connected with the adipose.

Finally, the excellent results of two trials of medication with thyroidin are pointed out; this lessened the intensity of pain and caused some of the tissue to be absorbed. Such success with this remedy is rare, but it is an interesting and signal case when such good fortune results.

2. *Basedow's Disease and Iodoform Ether.*—This new mode of treatment was made known by Prof. Pitres, who, among twelve patients, cured six and improved the rest. The solution is: ether 20 gm., iodoform 4 gm. Each injection is 1 cc. of this by the Pravaz syringe after the usual antiseptic precautions. In order to inject, it is necessary to define by palpation the thyroidian tumor, and to recognize the superficial veins and nerves of the neck; the latter are moved to one side with the left hand, and the needle, ordinarily held like a pen, is placed lightly on the point of greatest hypertrophy of the goiter. By obtaining a movement of deglutition from the patient, one is assured of the penetration of the needle in the thyroid body and rapidly injects. The injections are sometimes preceded, accompanied or followed by certain phenomena which the author emphasizes. Emotional apprehension, which causes trembling and palpitations, augmentation of ocular tension and conjunctival hyperemia are often preliminary symptoms. At the moment of injection there is a sort of bubbling comparable to the penetration of air into the veins: this is rare and probably due to the sudden evaporation of ether. There are also some changes relative to the distention of the glandulo-vascular parenchyma and to the probable compression of some of the nerves; they consist in a sensation of increase in the size of the throat, smarting, pinching and shooting pains from the cervical region to the jaw, ear, and the nape of the neck; often a dry cough is present. After the injection a more or less marked tension is felt in the thyroid region; often a bad taste in the mouth, resulting from the passage of iodide in the saliva. To control the lesions produced in the interior of the goiter by these injections, connective tissue must be produced. There is first a diffuse sclerosis with capsular and vascular predominance, making ridges and irregular thyroid lobules in the interior of which there is dislocation and atrophy of the vesicles, disappearance of the colloidal substance and an extreme proliferation of the epithelial elements. Later the connective tissue becomes fibrous.

The experiments in this treatment extended over twenty-four cases of Basedow's disease, some severe, some light, all treated in this way exclusively. The patients were all women, from fifteen to fifty years old, at all stages of the malady. The injections of 1 cc. were made at intervals of seven to eight days at the point of great-

est hypertrophy. In each case improvement followed, sometimes after only one or two injections, but when complete cure was affected, after months or even years, with the treatment less frequent. Of the various symptoms, goiter is the first to diminish, the injections having as their object the sclerosis of the gland; then headaches, insomnia, irritability, amenorrhea, polyuria, difficult deglutition, ocular pain, all disappear; later appetite returns and digestion is good, strength increases and the usual occupations are resumed. Even the cardinal symptoms improve; trembling often disappears completely; the subjective symptoms which accompany tachycardia, particularly precordial pain, vanish; the thoracic attacks and the beats of the carotids are no longer perceptible. Likewise the paræsthetic or painful phenomena, which accompany exophthalmia and the motor troubles and inflammatory lesions which complicate it disappear rapidly and permanently. Accidents or complications or inflammatory phenomena have never been known to follow injections of iodoform ether. Once only a state of semi-syncope was brought about, and once a slight unilateral paralysis of the glottis, which disappeared in a few days.

3. *Alcohol and Thyroid Extracts.*—In studying the action of thyroid fluids upon the central nervous system, the author found that an intravenous injection produces, in the dog, an acceleration of pulse and a diminution of blood pressure. The author has already shown that the first phenomenon is caused primarily by the accelerator nerve of the heart, and the second phenomenon by the direct enfeeblement of the heart itself. He found that thyroid liquid preserved by means of alcohol lost its efficacy, while acting as a fresh liquid when preserved in carbonic acid; and on closer study noted that it was the alcohol itself which caused this inefficiency. Thyroid liquid, if mixed at all with alcohol, acts differently from the fresh, and the action depends upon the quantity of alcohol; that containing only a few drops being scarcely changed; mixed in equal proportions, the liquid produces diminution in blood pressure more pronounced than that of the pure liquid, and a slow pulse. The combination of thyroid liquid and alcohol, in the proportion of twenty to ten, produces slight slowing of pulse and less pronounced diminution of blood pressure. With less alcohol there results slighter slowing of pulse and almost no change in blood pressure. With fifty parts of thyroid liquid to twelve of alcohol, action of the extract is not destroyed, though acceleration of pulse and diminution of blood pressure are less than after injections of fresh liquid. Injection of liquid of a mixture in the proportion of twelve to fifty produces very considerable pulse and pronounced diminution of blood pressure. To account for all these phenomena, study was begun on the innervation of the heart. When the diminution of blood pressure is concerned, it depends directly on the enfeeblement of the heart itself. The slowing of the pulse is caused by the excitation of nerve centers as much as by that of the periphery, and in part also by the direct action of the alcohol on the heart. The weak doses of alcohol directly influence heart action in such a way that, reinforcing it, they slightly augment blood pressure. One might consider thyroid liquid and weak doses of alcohol as antagonistic, but in consideration of the results of the experiments in different proportions, and the various results on separate animals, the variation is from the quantitative point of view only. To show that alcohol does not affect the essential nature of the thyroid extract, the following experience is adduced by the author. Two mixtures were prepared, one with

twelve parts of the liquid to fifty of alcohol, the other with fifty parts of liquid to twelve of alcohol. The alcohol was allowed to evaporate from both, and the residue was injected with a little distilled water into the animal. The result from both was as that of fresh thyroid liquid. Thus alcohol does not essentially alter the thyroid fluid and leaves it with its powers of action upon heart and blood pressure; but when preserved or mixed with alcohol, it acts in a manner different from that of the fresh liquid, as the action of alcohol in the mixture paralyzes the action of the thyroid principle.

JELLIFFE.

Allgemeine Zeitschrift für Psychiatrie und psychischgerichtliche Medicin.

(1902. Vol. 58, January, No. 6.)

1. Some Internal Symptoms of Somatic Degeneration in Paralytics and Normal Individuals; also a Contribution to the Anatomical and Anthropological Variations of the Visceral Organs in Man. NÄCKE.
2. A Statistical Study of the Etiology of Progressive Paralysis. HOPPE.
3. Height and Body-weight in Idiotic Children. SKLAREK.
4. A Contribution to the Differential Diagnosis of Hysteria and Katatonia. KAISER.
5. Circular Insanity with Choreic Movements Occurring in a Child. VAN BREVO.
6. On Conrad Ferdinand Meyer. HESS.

1. *Some Internal Symptoms of Somatic Degeneration.*—Näcke made autopsies on 104 general paralytics and 108 normal individuals to determine the presence of visceral stigmata of degeneration, such as double apices of the heart; anomalies in the lobular formation of the lungs; lobulation and incisures of the liver; horse-shoe kidneys, etc. Each paralytic showed on an average four visceral stigmata, while an average of two or three was found in normal individuals. He therefore concludes that general paralysis occurs mostly in those individuals of imperfect organisms, an opinion which indicates a greater hereditary basis in the etiology of general paresis than is generally held, and also possibly indicates a more fruitful source of determining the degree of individual degeneracy than that usually followed in examining external bodily signs solely.

2. *Etiology of Progressive Paralysis.*—Hoppe found in a statistical study of the etiology of 501 general paralytics that syphilis was the "only cause" in 5.2 per cent., syphilis plus other causes in 20.2 per cent., alcoholism alone in 3.8 per cent., combined with other causes in 19.8 per cent.; heredity in 9.2 per cent., combined with other causes in 32.3 per cent.; sexual excesses in 0.4 per cent., combined with other causes in 7.8 per cent.; emotional causes in 5.4 per cent., combined with other causes in 18.8 per cent.; over-exertion in 2.6 per cent., combined with other causes 9.1 per cent. However, in such studies the possible faulty etiological history must be borne in mind.

3. *Height and Body Weight in Idiotic Children.*—In the study of idiots in the Insane Asylum at Dalldorf, Sklarek found the physique of the teachable idiots proportionately poorly developed as compared to that of normal children, and those teachable idiots who showed the greatest capacity approached nearest to the normal in physical growth.

4. *Differential Diagnosis of Hysteria and Katatonia.*—Following a long etiological digest upon hysteria and katatonia, Kaiser calls special attention to the occurrence of katatonia developing from infantile eclamptics; such cases closely resemble those suffering from so-called hysterical states of apathy. From a theoretical standpoint he believes these cases are psychogenic disorders combined with phenomena resembling katatonia.

5. *Circular Insanity with Choreic Movements.*—In a short etiological study of a case of choreic movements in a child suffering from circular insanity, Van Brevo concludes that katatonia cannot be excluded, and the choreiform movements present in the case might be thus explained.

6. *Conrad Ferdinand Meyer.*—The article is a psychological study of the late poet, C. F. Meyer, and concludes that the mental breakdown from which the poet suffered at 62 years of age, lasting more than a year, was a form of involuntional melancholia occurring in an individual possessed, however, of a very peculiar constitutional temperament.
L. P. CLARK (New York).

Rivista di Patologia Nervosa e Mentale.

(1902. Vol. 7, fasc. 2, February.)

1. Clinical Contribution to the Knowledge of Gustatory Innervation. G. FASOLA.
2. Traumatic Astasia-Abasia in an Epileptic Child. U. GABBI.
3. Dystrophic and Myxedematous Infantilism from Heredito-Pellagra. C. AGOSTINI.

1. *Gustatory Innervation.*—That the lingual is the nerve of gustatory as well as general and tactile sensation for the anterior two-thirds of the tongue, and that gustatory and general sensibility of the posterior third are presided over by the glosso-pharyngeal, is hardly to be questioned; but the fact that one of these functions, taste, for example, may be entirely abolished without disappearance of the others, has led to the belief that the gustatory fibers are distinct from those of general and tactile sensibility. The origin of the former has been the subject of much discussion. As to the posterior third of the tongue, authorities agree, with few exceptions, that its functions are controlled by the fibers of the glossopharyngeal proper. Opinions as to the innervation of the anterior two-thirds embrace a wide and varied range, the derivation of the gustatory fibers of the lingual nerve being variously attributed to the chorda tympani, the IX and the roots of the V nerve. The author's contribution to the solution of this question is based upon observation of two cases in which resection of the 2nd and 3rd branches of the V, with extirpation of the adjacent part of the Gasserian ganglion were followed by gustatory disturbance of the left lateral region of the anterior half of the tongue. Gustatory as well as tactile and dolorific anesthesia were manifest immediately after the operation. Amelioration of the first-named condition was noted within ten days, and an almost complete restoration to the normal was established within two months; although gustatory sensibility continued less acute upon the left side than the right. The writer asks and answers the following pertinent questions: "Could gustatory disturbances have depended upon tactile anesthesia caused by section of the 3rd branch?" and "Were such anomalies caused by vasomotor or trophic disturbances?" A negative reply is made to the former, in the statement that the return of gustatory sensibility preceded that of

the tactile, and that the former was markedly improved when tactile anesthesia was still complete. An answer to the second question is found in the fact that gustatory anesthesia was at its height immediately after the operation, when, presumably, the gustatory organs could not have been influenced by trophic disturbances; moreover, there was at no time evidence of trophic disturbance. The author maintains that gustatory disturbances in these two cases could depend solely upon section of specific fibers, and that section of the 2nd and 3rd branches of the fifth, having been performed at the level of the Gasserian ganglion, it is demonstrated that: (1) The trigeminal has gustatory fibers proper, which pass to the anterior margin and tip of the tongue either directly by the lingual branch of that nerve, or passing first into the chorda tympani at some more central point, for example, through a branch of the otic ganglion. (2) Granting the possibility of the chorda containing a part of the gustatory fibers of trigeminal origin, this does not exclude the fact that it may contain gustatory fibers of different origin, that is, from the intermediary of Wrisberg and the glossopharyngeal. This possibility must be admitted to explain the existence of slight gustatory sensibility immediately after the operation, and its almost complete restoration after a lapse of time.

2. *Traumatic Astasia-Abasia*.—The history of this case presented no special neuropathic family tendency, but severe mental shock to the mother during pregnancy would seem to have been responsible for the condition described. The chief points of interest are the occurrence of epileptic phenomena about the fourth year of life, followed later by astasia, induced by the lightest blow upon the head. The condition is contrasted with Brocq's description of Astasia-Abasia, namely, a morbid state in which the inability to stand or walk is in marked contrast to the integrity of sensibility and coordination of other movements of the lower limbs. In this case, astasia was the prominent symptom, abasia being noticeable only in a temporary staggering after a fall caused by percussion of the head, amounting only to a rudimentary abasia trepidante. Abasia was never spontaneous as described in the syndrome of Brocq, but always induced by a blow upon the head. The author leans to the pretty general belief in the hysterical nature of astasia-abasia, and in the case described, maintains that as the child was epileptic there was abnormal increase in excitability of the motor zone, and that as a latent hysterical neurosis found in the former a *locus minoris resistentiae*, it was rendered the sole center of induced morbid manifestations.

3. *Dystrophic and Myxedematous Infantilism*.—A study of five interesting cases (illustrated) is given from which, as well as from the literature of the subject, the following conclusions are drawn: (1) Maize intoxication of ancestors, especially of the pregnant mother, may induce premature exhaustion of vitality, degenerations, and above all, arrested development of the organism. (2) In the heritopellagrous are noted, high percentage of mortality, predominance of degenerative characteristics, especially cranial anomalies, dystrophic and myxedematous infantilism, and extinction of procreating power. (3) Thyroidal anomalies in cases of hereditopellagrous arrested development, and frequently observed in pellagrous patients, demonstrate the ready mobility of this gland in the presence of maize poisoning, and account for dystrophic and myxedematous phenomena which arise, which in turn aggravate the phenomena of pellagrous intoxication.

R. L. FIELDING (New York).

Archives d'électricité médicale Expérimentales et Cliniques.

(1902. No. 109, January.)

1. The Electrical Reactions in family Periodic Paralysis. ODDO and DARCOURT.
2. On the Law of Stimulation of Nerves and Muscles. J. CLUZET.
3. The Electric Valve of Villard with Maximum and Minimum Spark Gaps. A. BÉCLÈRE.
4. The Employment of the Geissler Vacuum for the Production of Chemical Rays. Dr. STÉPHAN LEDUC.
5. A Comparative Study of the Foucault and of the Wehnelt Types of Interrupters. ALBERT TURPAIN.
6. A Note upon an Apparatus that Conveniently Permits a Preliminary Fluoroscopic Examination as well as a Radiograph to be Made of a Prone Individual with the Tube placed above the Subject. Dr. H. GUILLEMINOT.
6. A New Electrostatic Electrode of great Sensitiveness. DIAZ DELGADO.
7. A New Arrangement of the Static Machine and its Accessory Appurtenances. J. B. (Edit. note.)

1. *Electrical Reactions in Family Periodic Paralysis.*—In this paper the authors give a minute report of the electrical reactions observed in a patient with family periodic paralysis in whom all the muscles of the extremities and some of those of the trunk were totally paralyzed during one of the periodical attacks. From their observations of this case and from the description of the reactions occurring in cases of this disease previously investigated by Westphal, Oppenheim, Goldflam, and others, the authors conclude as follows: (1) During every attack the electrical irritability is altered, whether the stimulus is a direct or an indirect one; (2) no R. D. occurs; (3) the diminution of the irritability is in relation to the degree of the paralysis, and accompanies the latter in its distribution; (4) between the attacks the reactions become normal, at most a slight diminution in the irritability may still persist; since the topographical distribution of the paralysis appears to be irregular and not confined to regions supplied by particular, or spinal segments, and as the muscles respond more readily with indirect stimulation, the authors consider the seat of the affection to be in the muscles, and regard the disease as a variety of myopathy essentially functional in character.

2. *Law of Stimulation of Nerves and Muscles.*—As the result of investigation upon nerve muscle perforations from frogs and upon men, the author concludes that the law discovered by Weiss prevails approximately when nerves and muscles are stimulated through the skin by the unipolar method with ordinary electrodes. According to the author, Weiss' law, Q equals A plus BT , means in plain language, that, if an electric stimulus is applied to a nerve or muscle to produce a minimum response, the stimulus must put in motion a constant quantity of electricity plus a quantity proportional to the time of the discharge.

3. *Electric Valve of Villard.*—The author describes an auxiliary apparatus for X-ray work composed of a Villard electrostatic valve shunted by a wide and a narrow spark gap, which arrangement is claimed to be very efficacious for rendering the induced current from induction coils more uni-directional, and for controlling with greater nicety the voltage applied to the X-ray tube.

4. *Geissler Vacuum Tubes*.—For obtaining intense violet and ultra-violet rays, the author recommends special tubes exhausted only to the usual Geissler vacuum in preference to the more costly and complicated arc light installations of the Finsue type. The intensity of action of such tubes is 60 times that of the arc light.

5. *Types of Interruptors*.—In this paper the author fully describes and contrasts the merits and the faults of Foncault's mechanical interrupter, and of various varieties of the Wehnelt and the Caedwell electrolytic interrupters.

6. *Fluoroscopic Examinations*.—A description extolling the merits of a rather complicated arrangement containing a horizontally-placed plate-holder, fluorescent screen, and a mirror on pinions, all of which are borne by a vertically-adjusted framework that can be placed beneath the X-ray examination table.

7. *Electrostatic Electrode*.—A description of a static electrode bearing an adjustable spark-gap attachment upon its long, hard-rubber handle.

8. *New Arrangement for Static Machine*.—A description of a Wimshurst machine with the rotors located in the lower part of the case, while the various dischargers, jars, etc., are arranged upon the low, flat top.

R. H. CUNNINGHAM (New York).

MISCELLANY.

CONTRIBUTION TO THE TREATMENT OF SYDENHAM'S CHOREA (Gazz. degli Osped., 1901, No. 144):

Jemma reports excellent results from lumbar puncture in two severe cases of chorea minor, 25 cc. of fluid being withdrawn; the effect was instantaneous. Choreic symptoms reappeared after a time though not in the original severity, and subsided entirely after repeated puncture, a cure being effected within four weeks. The favorable influence of this measure is believed to be due to decrease in endocranial pressure.

FIELDING (New York).

TREATMENT OF HYDROCEPHALUS (Archiv. f. Kinderheilkunde, Bd. xxxii, p. 329).

Immerwol reports treatment of 10 cases of hydrocephalus in children from 3 months to 2 years. (Nine congenital hydrocephalus and 1 acquired.) Therapeutic measures used were: antisyphilitic treatment; lateral puncture of the cerebral ventricles; puncture followed by injection of tr. iodine; and lumbar puncture. The author believes repeated lumbar puncture to be indicated in all cases of acquired hydrocephalus, and advises its trial in the congenital form; never omitting, however, antiluetic treatment.

FIELDING (New York).

TREATMENT OF NERVOUS DISEASES WITH BROMALBUMINOUS PREPARATIONS (Therapeutische Monatshefte, No. 1, 1902).

Of all the bromide preparations, bromeigon and brompepton contain the smallest amount of bromide, yet their influence is not less for this. Through bromalkalies the organism is more rapidly saturated with the drug; yet, on the other hand, the effect of bromalbumen is more protracted, and after the use of brompepton even in relatively large amounts, bromism is not observed. This may be due to the fact that bromide does not readily break up from the albumen molecule. Silberstein has used brompepton most frequently in epileptic convulsions. In his hands it has also proved serviceable in irritation of the cerebral cortex after acute alcohol-intoxication,

as well as in the treatment of chorea. In infantile convulsions it is to be administered by enema. Used in this way it quiets diarrhea, and its internal administration favorably influences gastric catarrh. This remedy is valuable in insomnia due to nervous excitation, as in neurasthenia, delirium tremens, maniacal conditions, etc., and is to be preferred to other hypnotics where prolonged use is necessary. Its analgesic properties make it desirable in cases in which the origin of pain lies in the central nervous system. Brompepton is best used in 20 per cent. watery solution. For children the best method of administration is by enema or brompepton malt-extract.

FIELDING (New York).

NEW TREATMENT OF TRUE EPILEPSY. Lion (Berliner klin. Woch., No. 52, 1901).

Lion has seen rapid and marked improvement in 20 advanced cases of epilepsy through the use of cerebrinum-Poehl; while symptoms in the first stages of epilepsy decreased after the first dose, and epileptic seizures gradually disappeared entirely. In severe cases a combined treatment of cerebrin and bromide is efficacious. Cerebrin or opocerebrin is to be given in tablet 0, 2—0, 3; and 0, 4—0, 6 administered daily; it should be used at least a month, bromide 2, 0—3, 0 pro die being given at the same time.

TRIONAL IN CHOREA (Brit. Med. Jour., 1901, Nov. 2).

Meade states that trional is sedative in chorea where preparations of arsenic and bromide fail entirely of effect. It is best administered in doses of 1 gm. in the morning, and 1.5 gm. at night, in fruit-juice, immediately followed by a drink of warm water, to insure its speedy absorption by the system. FIELDING (New York).

THE PHYSIOLOGICAL ACTION OF THE POLAR DISCHARGES OF HIGH PRESSURE INDUCED CURRENTS AND OF VARIOUS INVISIBLE RADIA-TORS. L. Freund, Sitzungsberichte der Akademie der Wissen-schaften, Wien (cix, bd., viii hft.).

This is a voluminous experimental paper in four parts in which the author describes his methods of exposing rabbits and cultures of micro-organisms to the brush discharges and to direct spark discharges from the secondary terminals of a large induction coil and from the high potential terminal of an Ondin resonator. In a former paper in 1897 the author considered that the Röntgen rays themselves were responsible for the physiological effects, but from the results of the experiments described in this article he is led to conclude as follows: (1) Direct spark discharges either in the form of the spark discharge from the terminals of an induction coil, or in the form of a brush discharge from the D'Arsonval-Ondin apparatus can produce depilation in animals. (2) Directly-applied sparks can not only inhibit the development of, but even kill recently-planted or fully-developed cultures of *Straphylococcus pyogenes aureus*, typhoid bacilli, diphtheria bacilli, tubercle bacilli and *achorion schoenleinii*. (3) The effect of the directly-applied sparks is augmented by directly or indirectly grounding the culture container, by prolonging the exposure, by diminishing the distance between electrodes and container, by increasing the intensity of the primary current through the induction, and by a more rapid rate of interruption. (4) The above-mentioned action occurs under certain conditions through intervening thin layers of wood, paper, aluminum, tin foil or human skin. (5) Micro-organisms in suspension in fluids are also acted upon. (6) The physiological action of the negative spark discharge is more intense than that of the positive, although the extent of the area affected is less.

(7) The silent discharge is a variety of spark discharge in which the physiological activity becomes somewhat diminished, but by which, however, many undesirable accompaniments of the directly-applied sparks, for example, pain, are avoided. Although the extent of its field of action is greater than that of the actual spark discharge, its mode of action is qualitatively the same. (8) According to these experiments no physiological import can be attributed even to Röntgen rays as regards their influence upon bacterial life. (9) Neither Becquerel rays nor phosphorescent rays manifest physiological activity upon bacterial growths or upon normal skin. (10) The pathological changes produced in the skin by direct spark discharges consist of hemorrhages into the cutis, in inflammation and in the formation of vacuoles in the internal and middle coats of the arteries.

R. H. CUNNINGHAM (New York).

WEITERE BEITRÄGE ZUR PATHOLOGIE UND PATHOLOGISCHEN ANATOMIE DES UNTEREN RÜCKENMARKSABSCHNITTES (Further Contributions to the Pathology and Pathological Anatomy of the Lower Portion of the Spinal Cord). L. R. Müller (Deutsche Zeitschrift für Nervenheilkunde, 1901, xix, 5 and 6, s. 303).

AND

ZUR PATHOLOGIE DER TRAUMATISCHEN AFFECTIONEN DES UNTEREN RÜCKENMARKSABSCHNITTES. DAS GEBIET DES EPICONUS (On the Pathology of Traumatic Affections of the Lower Part of the Spinal Cord. The Region of the Epiconus). L. Minor (Deutsche Zeitschrift für Nervenheilkunde, 1901, xix, 5 and 6, s. 331).

In these two articles, the authors—the former of whom has previously made an important contribution to the subject—give the histories of cases of injury to the lower portion of the spinal cord and cauda equina and discuss the diagnostic points involved. By far the most interesting is Müller's first case, since it presents the picture of a pure conus lesion, confirmed by autopsy.

A man of thirty-seven, in 1887, fell from a height of ten meters, striking his back in the lumbar region on a beam. He lost consciousness and upon regaining it suffered scarcely any pain, but was completely paralyzed. At the start he was catheterized, but later the urine passed involuntarily and without sensation. After about six weeks he began to recover the use of his arms, eventually regained some power in the legs, and could walk with a crutch. Entire incontinence of urine and feces remained, but sexual power was retained and after the accident he begat two children. Examined by the author in 1896, he presented a prominence of the spine of the first lumbar vertebra, weakness in the abductors and external rotators of the thigh and flexors of the leg, complete paralysis of the glutei, and all the muscles of legs and feet. The calf muscles, however, showed no wasting, but were thick and felt firm. There was anesthesia as high as the knees in front and extending up an area on the back of the thigh and over the buttocks. It was complete except over a narrow area on the inside of leg where touch sense was preserved. There was also loss of temperature and pain sense over penis and scrotum. Electrical irritability was lost in the gluteal and calf muscles. The patient gradually failed in health and died of pulmonary tuberculosis in April, 1900.

The autopsy showed an old fracture of the first lumbar vertebra, with compression and entire destruction of the cord from the fourth lumbar throughout the sacral segments, the lower part of the conus having escaped. The nerve roots forming the cauda equina were little affected. Microscopical examination showed in the cervical

and dorsal regions, a small area of degeneration in the columns of Goll, a slight triangular area of degeneration in the antero-lateral tract, and dilatation of the central canal. In the upper lumbar region degeneration involved all of the columns of Goll, while the fibers of Burdach's column were extraordinarily thick and deeply stained. In the second lumbar segment the deformity began, and in the third, the entire posterior part of the cord was destroyed, but the roots were recognizable though pushed to one side, and were well medullated.

In the fourth and fifth lumbar segments the cord structure was unrecognizable, its usual place being filled with glia tissue. Lateral from this, however, were numerous well-preserved nerve bundles, and in the middle of it, a bundle of well-medullated fibers, which were continued above in Burdach's column, and from the way they stained, etc., appeared to be newly formed. In the sacral segments similar conditions existed, the posterior roots contained fewer medullated fibers than the nerves of the cauda. The bundle of medullated fibers was still visible in the mass of glia tissue. On the lowest segments, the outline of conus was again visible, and there were even some cells at the base of the anterior horn which appeared to be ganglion cells. The cross section in fact appeared normal. The remaining roots forming the cauda, contained mainly well-medullated fibers, only a few of them showing degeneration. In the nerves passing to the paralyzed muscles there was some rarefaction of fibers, but little degeneration. There was, however, such a marked interstitial deposit of fat that the cross section of the nerve was far greater than normal. In the affected leg muscles the muscular tissue was largely replaced by fat. The author analyzes this case, and tells why he long before had diagnosed conus lesion. Most of the symptoms might be produced by lesion of the cauda equina below the fourth lumbar root. The patellar reflex was lost, however, while the quadriceps continued to functionate well; also the sensory fibers from knee and thigh were intact. This was explained as due to breaking of the reflex arc, by a centrally-located lesion, which would also account for the dissociation of sensation found in an area on the legs. The complete paralysis of trunk, arms and head which existed for several weeks, was explained by assuming that there was a hemorrhage filling the central canal, which was later absorbed, and since the autopsy showed that a dilatation had existed, even though he found no trace of blood pigment, the author thinks that his explanation was probably correct. That the lowest portion of the cord (the two coccygeal segments) was preserved may explain the astonishing fact, that though there was incontinence of urine and feces, erection and procreation were still possible, and we should locate the erection center in these segments. It is necessary, however, to assume a connection of these segments with the brain, and this he thinks was effected through the small bundle of newly-formed fibers found passing through the replacing neuroglia mass, and eventually reaching the columns of Burdach. This was also evidenced by the fact that in penis and scrotum touch sense was preserved.

Müller gives the clinical histories of two more cases, and from the study of these three and their comparison with other observations, he feels justified in drawing the following conclusions: The first lumbar vertebra is the one most frequently fractured in injuries to the lower portion of the spinal column. The preservation of the anal reflex shows that the lowest part of the cord has escaped

injury. If the sexual function is retained, not only must the lower half of the conus be preserved, but it must remain connected with the cord above, and the brain.

Minor calls particular attention to the fact that between the second and third sacral segments there occurs a marked change in the microscopic picture. This was first described by Müller. The anterior group of motor cells here disappears and a new group of multipolar cells appears in the region between anterior and posterior horn. The posterior commissure disappears and there is found instead in the medioventral part of the posterior column a sharply-defined bundle of longitudinal fibers which passes into the gray matter and proceeds directly to the region of the intermediate cell group just mentioned.

Further, the pyramidal tracts extend only to the third sacral segment, descending degeneration always disappearing at this point. The region from the third sacral segment caudally forms a special part of the spinal cord which has been called the conus, and lesions confined to this region give a typical clinical picture. In lesions of the region immediately above the third sacral, however, the clinical picture is much more complicated, and it has been thought by some authors impossible to construct one which is typical. This, Minor thinks, is only true for complete transverse lesions, in which case symptoms from the adjoining lower segments are also produced. When a central lesion of the gray matter or of the corresponding roots from the region in question occurs alone, or when the two are combined, the symptoms produced are typical. These Minor gives as two negative and several positive. The negative symptoms are integrity of the sphincters and preserved knee-jerk. The positive symptoms are paralysis in the region of the sacral reflexes, in every case the peroneal nerve being most severely and permanently affected. For this region (the fifth lumbar and two upper sacral segments) he proposes the name "Epiconus." As illustrating his views he gives the clinical histories of six cases, in none of which was there an autopsy, however. He also analyzes several cases from other sources. The two articles give an excellent résumé of the subject, but space permits of no more than the outline of them here presented.

ALLEN.

DIAGNOSTIC DIFFERENTIEL DE L'HÉMIPLÉGIE ORGANIQUE ET DE L'HÉMIPLÉGIE HYSTÉRIQUE (The Differential Diagnosis of Functional from Organic Hemiplegia). Babinski (Gazz. des. Hôp., Vol. 73, May 5 and 8, 1900, p. 521 *et seq.*).

The author points out that in organic hemiplegia the paralysis is limited to one side of the body, while in hysterical hemiplegia it is not. This observation applies particularly to the face, the paralysis of which in the hysterical form is generally bilateral. In the organic form the paralysis is not systematic. If, for example, one side of the face is profoundly paralyzed, the weakness remains quite evident during the bilaterally-associated movement of the face, but in the functional the paralysis is usually systematic. For while the unilateral movements of the face may be completely abolished, the facial muscles on the paralyzed side act well during the bilateral movements. In the organic there is muscular hypotonicity, principally at the beginning, which is shown in the upper limb by the exaggerated flexion of the forearm. In the functional form there is no hypotonicity; when there is, for example, facial asymmetry, it is due to spasm of the one side. The periosteal and

tendon reactions are either abolished, diminished, or increased at the beginning in the organic, and later they are nearly always exaggerated with ankle clonus; but in the functional form these deep reflexes are unaltered, and there is no ankle clonus. In the organic hemiplegia the skin reflexes are generally altered; the abdominal and cremasteric are usually weakened or abolished; the movement of the toes on eliciting the plantar reflex is one of extension; in the functional hemiplegia the cutaneous reflexes are unaffected, and the plantar reflex is the normal flexor response. The character of the contracture in the organic paralysis could not be reproduced by a voluntary contraction of the muscles while in the functional paralysis it well might. The evolution of the organic hemiplegia is regular; contracture follows flaccidity; improvement is progressive, and the paralysis does not fluctuate, now better, now worse. In the functional paralysis the evolution is capricious; the paralysis may remain indefinitely flaccid, or it may even be spasmodic at the beginning. The paralysis is variable in degree and in form, and there may be actual remissions.

JELLIFFE.

LE SYNDROME MIGRAINE OPHTHALMOPLÉGIQUE COMME PREMIÈRE MANIFESTATION DANS UN CAS DE SYPHILIS CÉRÉBRALE (Ophthalmoplegic Migraine, an early Manifestation of Cerebral Syphilis). H. M. Lamy (Bull. de la Soc. Méd. des Hôpitaux, Vol. xvii, 1900, Dec. 14, p. 1,188).

A woman, aged twenty-six years, had violent migraine two months following confinement. The pains were chiefly localised in the orbital regions, and were accompanied by nausea and vomiting. Both sides were attacked alternately but the pain was more severe on the right. The eyelids were the seat of intense pain, and during the migraine there was slight ptosis on the side involved, which appeared with the commencement of the headache, and generally lasted for some hours. During one attack the patient lost consciousness. Upon recovery the migraine had vanished. Afterwards she was without pain for fifteen days. The attacks then reappeared, were more frequent and severe, and became distinctly unilateral. Ptosis of the right lid followed and continued for a month; later there was double ptosis for five days, but only that on the right side was permanent. Finally, the hemicrania alternated with remarkable regularity, and always became worse during the evening, rendering sleep impossible.

Six months after the onset there was complete right ptosis, and the right pupil was dilated and responded only feebly to light. The left eye was normal. There was loss of memory, the gait was somewhat hesitating and uncertain, and the patient complained of persistent nausea. Although no syphilitic history was obtained cerebral syphilis was diagnosed and energetic treatment adopted. After giving mercury and iodide for a few days the headache and ptosis disappeared and the memory improved. When discharged from hospital the patient neglected treatment and the migraine returned. Resumption of medication ameliorated the condition, but the right pupil became permanently dilated and the opposite external rectus paralyzed.

The unilateral ptosis and the later implication of the sixth nerve together with the other symptoms, indicated something more than simple or periodic migraine. If no organic lesion was present, localised arterial spasms are suggested as explaining the intermittent and alternate paralyses.

JELLIFFE.

ZUR FRÜHDIAGNOSE DER TABES (Early Diagnosis of Tabes). Erb (Münch. med. Woch., Vol. 47, 1900, July 17, p. 989).

The author refers to larval forms of tabes dorsalis, the diagnosis of which is difficult, and alludes to the fact that such forms may persist for years. The points of diagnostic value are (1) "lightning" pains, (2) slight paresthesia, (3) diminished sexual power, (4) Romberg's symptoms, and (5) unilateral Argyll-Robertson's pupil. If to these symptoms be added the history of a previous syphilis, the diagnosis is made certain. The knee-jerk may or may not be absent; thus in five cases the knee-jerk was present, but the presence of the other signs confirmed the diagnosis. In one class of cases visceral crises (gastric, laryngeal, recto-vesical, etc.) appear early, and such cases may persist in the larval condition for a considerable time, or may develop into typical tabes dorsalis. For treatment mercurial inunction should be freely employed, and suspension may be regularly carried out by the use of suitable apparatus. The ultimate prognosis is, however, not favorable. JELLIFFE.

DU TRAITEMENT DE LA CHORÉE HYSTERIQUE PAR L'IMMOBILIZATION (Treatment of Hysterical Chorea by Fixation). L. Huyghe (Le Nord Médical, Vol. viii, 1901, Aug. 1, p. 173).

Huyghe has been able to cure six cases by immobilization. The patient is chloroformed slightly, and the choreic limbs vigorously massaged, so that the patient feels it, and at times even painfully. Thus the choreic has the belief that she is being operated upon. The limbs are then placed in splints and immobilized for five or six days, and generally all choreiform movements cease. If they still persist, the limbs are again immobilized. This is a species of autosuggestion which has met with some permanent successes. BASTEDO.

HYDROPHOBIA AND THE LEUCOCYTES. J. Courmont and C. Lesieur (Journal de Physiologie et Pathologie Générale, July, 1901).

The question as to whether there occurs in this disease a quantitative or qualitative modification in the number of leucocytes, and, if so, whether it can be utilized for diagnostic purposes, both before and after death, has recently been studied by these authors. Their researches were carried on clinically on a man, the cat and the dog and experimentally on the guinea-pig, rabbit and dog. Their blood smears were stained with Erlich's tri-acid solution, eosin-hematoxylin and thionine. They find that at times the total number of leucocytes is considerably raised, especially in the terminal stages. Often it is preceded by a hypoleucocytosis particularly in rabbits. Independent of the degree of total hyperleucocytosis there occurs in man a marked increase in the number of the polynuclearneutrophils so that they constitute from 84 to 88 per cent. of the total number of leucocytes. This increase is established at the time of appearance of the nervous symptoms and augments until death. No abnormal leucocytes or nucleated red blood-cells are present. Good preparations can be made from the pulmonary blood within six hours after death, but this contains a less number of the leucocytes than other blood. They conclude that the total leucocyte-count is not available for diagnostic purposes at any stage of the disease. From the onset of the nervous symptoms the differential count is of great value. An increase in number does not absolutely establish a diagnosis as this is found in other conditions, but a normal or reduced number at this stage absolutely negatives a diagnosis of rabies. HIGLEY.

Book Reviews.

A PRACTICAL TREATISE ON MATERIA MEDICA AND THERAPEUTICS. By JOHN V. SHOEMAKER, M.D., LL.D. Fifth edition. Philadelphia, F. A. Davis Company.

Another edition of Shoemaker's well-known treatise leads us to ask what it is that creates such a large demand for this work on therapeutics. Perhaps it is its encyclopedic nature, for scarcely a known drug is omitted from the strictly alphabetical "classification." The pharmacy and chemistry (called "Pharmacology" by the author) are briefly and well written, and, by much space-saving, a large number of useful prescriptions, written in both metric and English systems, have been included in the text. Hydrotherapy, massage, electricity, climate, diet, music, etc., are given proper attention. But little attempt is made to study the comparative merit of allied drugs. Both the British and the United States Pharmacopeia are represented, but there are no especially new features in the present revision.

BASTEDO.

L'EPILESSIA, EZIOLOGIA, PATOGENESI, CURA. By Dr. PAOLO PINI. Ulrico Hoepli, Milan, Italy.

This pocket manual is a carefully written study of epilepsy and its treatment from an experimental and therapeutic standpoint. It might be considered a series of essays on the history of the study of epilepsy, the theories of causation, and the numerous methods of treatment based on the several theories. Under the theory of intoxication are considered the sweat, urine, blood, gastric juice, cerebrospinal fluid, acid auto-intoxication, methylene blue, Welch's cure, etc. The infective and dynamic theories are given due attention. One-third of the volume is devoted to a careful criticism of the use of various bromine-containing substances such as bromalin, bromoform, bromopin, monobromated camphor and the bromides of ethyl, ethylene, potassium, ammonium, strontium, rubidium, gold, zinc and nickel.

Hypnotism, electricity, massage and physio-therapy are each given sections, and a chapter is devoted to farm colonies. Following each chapter is a very full bibliography covering American, English and various European writings.

W. A. BASTEDO.

TRATTATO DI PSICHIATRIA. Ad uso dei medici e degli studenti. Del Prof. BIANCHI LEONARDO. Direttore della Clinica Psichiatria e Neuropatologica della R. Università e del Manicomio provinciale di Napoli. Puntata 1a. Casa Editrice Cav. Dott. v. Pasquale Napoli.

This, the first fascicle of a treatise on psychiatry, is a modern exposition of the Italian school. Translations of foreign works into Italian there are plenty, but this work by Dr. Leonardo stands out almost alone as a native product.

The author says that the great amount of original work on the anatomy and the physiology of the nervous system that has come from Italian laboratories, more than warrants an authori-

tative expression of the present knowledge of psychiatry in that country.

In the first fascicle of some 170 pages the general fundamentals of the anatomy of the nervous system are given. This has been done in a direct and comprehensive manner, not too exhaustive, nor yet superficial; but the most modern of observations have been brought into correlation with older views.

The work is richly illustrated and the author is deserving of much credit for the excellent presentation made. JELLIFFE.

LA MIGRAINE ET SON TRAITEMENT. Par Le Pr. PAUL KOVALEVSKY. Vigot Frères, Editeurs, Paris.

Migraine has always been a mystery notwithstanding the fact that research after research has been conducted, with the view to compel the organism to yield up the secret of its causation. Many are the facts now known, but the fundamental disturbances have thus far escaped the ultimate tests of physiologist, pathologist, or chemist. The present short dissertation is a very excellent one, written in the illuminating manner that French thought so fully represents; but it cannot be said that Kovalevsky has given any newer interpretations. He has, however, brought together a great number of the latest researches and has performed a signal service for the student of this affection, although the author is far from conversant with the excellent work done in this country along chemical lines, notably the work of Herter and others.

The treatment of the affection is very fully and practically discussed. SMITH.

A SYSTEM OF PHYSIOLOGIC THERAPEUTICS. Edited by SOLOMON SOLIS COHEN, A.M., M.D.; Volumes III and IV, Climatology, Health Resorts, Mineral Springs. By F. PARKES WEBER, M.A., M.D., F.R.C.P. (Lond.) With the Collaboration for America of GUY HINSDALE, A.M., M.D. In Two Books. Book I—Principles of Climatotherapy, Ocean Voyages, Mediterranean, European and British Health Resorts. Book II—Mineral Springs, Therapeutics, etc.

The medical practitioner who seeks a guide to the conditions of climate, on account of which certain places have become known as health resorts, will find this work of practical value. A general outline of the principles of climatology in relation to health and disease is followed by detailed treatment of ocean voyages, their indications and contra-indications, and the location, altitude, rainfall, winds, proximity to water, etc., of the various health resorts of the world. The conditions at different seasons, effect of ocean currents, value of mineral springs, etc., are also included. The special diseases for which each resort is famous and for which it is especially adapted are set forth, the author not omitting mention of diseases for which the climate is unsuitable. It is noteworthy that the resorts are studied not merely as to climate, but also as to their social and educational advantages, commerce, ease of access, and expensiveness. A portion of the fourth volume is devoted to a list of disorders with the consideration of their treatment by climatological means. For example, for hay fever such American resorts as the White Mountains, Cape Breton, Muskoka and Banff are recommended; certain places in New Jersey, Long Island, etc., are probably good, but not certainly safe; and other places are useless for either prophylactic or curative purposes. Maps showing altitude, rainfall,

currents, etc., illustrate the physical geography of the earth, and add to the value of these books, whose information is made easily accessible by a very complete index.

W. A. BASTEDO.

A TEXT-BOOK OF THE PRACTICE OF MEDICINE. By Dr. HERMANN EICHORST, Professor of Special Pathology and Therapeutics, and Director of the Medical Clinic of the University of Zurich. Authorized Translation. Edited by Dr. AUGUSTUS A. ESHNER. In two volumes. W. B. Saunders & Company. Philadelphia and London.

Eichorst's Practice, although a comparatively recent work, at once acquired a very large sale in Germany notwithstanding the presence of a number of other very excellent treatises on the subject. The English-speaking medical public is to be congratulated on having this work in its present convenient form.

In some ways Eichorst differs from many of the works now in use. His keynote throughout is that of the worker with the sick, and the especial emphasis is laid on the treatment of abnormal conditions. His suggestions are numerous and helpful.

There is no lack of good sound fundamentals bearing on the subjects of pathology and diagnosis, in fact, these necessary descriptive portions are full and explicit, but they seem to be so considered as to lead up to the ultimate aim, the treatment of the patient.

In a multitude of counsellors there is much wisdom, and we are glad to welcome this new addition to the working forces in the combat with disease.

R. M. BROWN.

CLINIQUE DES MALADIES DU SYSTÈME NERVEUX. By Prof. F. RAYMOND. Cinquième Série. Octave Doin, Paris.

This book carries the reader through the fifth course of clinical lectures delivered by Prof. Raymond at the Salpêtrière; the style, being that of the lecture room, seems to bring one into personal touch with the lecturer. It embraces 650 pages, of which something short of 140 are devoted to a careful study of partial or Bravais-Jacksonian epilepsy in its various motor, sensory and psychic manifestations. A chapter on the topography of the sensory cortical centers is interpolated in this section of the work, embodying chiefly what is *not* known upon the subject rather than any important addition to the knowledge of sensory areas. Illustrations are freely used in the elucidation of this subject, as they are throughout the book, where necessary to a clear presentation of the conditions described. Of special interest are the lectures devoted to tuberculous meningitis "en plaques," much space being given to its early diagnosis, as offering the possibility of cure through operation. Several atypical cases of disseminated sclerosis are presented in comparison with the usual manifestations of that disease; the polymorphous symptomatology of hysteria receiving consideration in a section devoted to the differential diagnosis between that condition and disseminated sclerosis; the frequent occurrence of the two conditions simultaneously being noted. The subject of brain tumors is carefully and minutely treated, with special reference to diagnosis as to site, variety, etc. One of the hopeful sections, hopeful because of the suggestions of cure, is that dealing with polyneuritis, attention being called to its not infrequent confusion with myelitis. Among the rare conditions presented is a case of chronic progressive ankylosis of all the joints including the vertebral column, and simulating the condition described by Marie as "spondylose rhizomèlique." Other subjects treat-

ed are: glosso-labio-laryngeal paralysis; bulbar asthenia; sensory disorders in tabes; objective disturbances of sensibility in syringomyelia and disseminated sclerosis; dorsal Pott's disease; scleroderma; and hysterical word deafness.

A desirable feature, as facilitating ready reference, is a short clinical résumé following the detailed description of illustrative cases, and a condensed summary of diagnostic points, and treatment at the end of each lecture; the strength of the work lies in diagnosis, treatment being from the nature of conditions discussed limited largely to the palliative.

R. L. FIELDING (New York).

PERU. HISTORY OF COCA. The "Divine Plant" of the Incas, with an Introductory Account of the Incas, and of the Andean Indians of Today. By W. GOLDEN MORTIMER, M.D. J. H. Vail & Co., New York.

This is an exhaustive monograph of some 576 pages written in a most interesting manner on a topic of increasing importance. When in 1884 it was discovered almost by accident, as it were, that cocaine had its now well-known anesthetic effect on the conjunctiva, a renewed interest was taken in this drug, which for unknown centuries had been used empirically by a people who were the leaders in the aristocracy of an earlier day. Since 1884 many researches have been given the profession.

The author first very clearly sets forth, what is known to all students of pharmacognosy, that Coca is not Cocaine, and that there is much more to be said on the subject of the use of the crude drug as a tonic and restorative than to fall in line with some modern day followers of the W. C. T. U. class, and to condemn its use because of the occurrence of a cocaine habit in some degenerate individuals; most of whom have passed through the successive stages of alcoholism and morphinism to cocaineism. It is certain that the author makes an excellent brief for the use of this potent drug.

There are exceedingly complete and entertaining chapters on the botany, chemistry, physiology and therapy of coca, with many interesting interpolations of cognate questions; the action of coca on the muscular tissue and nervous organization being very full and authentic.

Taken at large this is an interesting and instructive monograph and the author deserves much credit for his industry and perseverance in its preparation.

JELLIFFE.

News and Notes.

THE NEXT Congress of Alienists and Neurologists of France and French-speaking countries will be held at Grenoble, August 1-8, 1902. Dr. E. Régis, professor of psychiatry at the University of Bordeaux, will preside. The following papers will be read: (1) Nervous Pathology, Tics in General, M. Noguès, of Toulouse. (2) Mental Pathology: Conditions of Anxiety in Mental Disease, M. La Lanne, of Bordeaux. (3) Legal Medicine; Auto-accusation from the Medico-legal Standpoint, M. Ernest Dupré, of Paris.

A SIMPLE and effective method of illumination of the grounds of the asylum at Bailleul, through the insertion at frequent intervals in the top of the surrounding wrought-iron fence, of a small quantity of radium, has been adopted. It is believed that the grounds will thus be so well lighted that escape of patients during the night will be impossible.

Giornale di Psichiatria Clinica e tecnica Manicomiale is the new title of an old journal devoted to alien studies in Italy. Previously, this journal has been known as the "Bolletino del Manicomio provinciale di Ferrara." The former editor, Dr. Ruggero Tambroni, remains as Director. Analyses of its contents will appear in the JOURNAL OF NERVOUS AND MENTAL DISEASE.

THE Biological Laboratories of the H. K. Mulford Company at Glenolden, Pa., make another step forward in the progress of work in serum-organotherapy, and in the investigation of infectious and contagious diseases, by securing the services of Joseph J. Kinyoun, M.D., Ph.D., late Surgeon of the Marine Hospital Service, and Director of the Hygienic Laboratory of the Marine Hospital Service at Washington.

Dr. Kinyoun is widely and favorably known at home and abroad as a sanitarian and scientific investigator, and has served the government on numerous occasions as special delegate to International Medical Congresses. He is devoted to original research in Bacteriology, and in the interests of the government he has visited the various bacteriological laboratories in this country and in all Europe and Japan. Dr. Kinyoun received special instruction from Professors Koch, Behring, Pasteur and Roux, of Paris and Berlin, as representative of the government, thus acquainting himself with the progress made in serum-organotherapy and in the investigation of infectious diseases. He is peculiarly fitted for the directorship he now assumes, and under his administration there will be still further advances made in the field of biology as applied to medicine.

STUDENTS about to graduate, who are unable to secure positions in general hospitals, or young physicians whose terms are about to expire in general hospitals and who wish to enlarge their experience, are now offered an opportunity to enter the New York State Hospitals as Internes or Clinical Assistants.

These positions provide lodging and board. Appointments are made for a year. Some twenty-eight positions will be opened in the

fourteen State Hospitals situated in the following places in New York State: Utica, Buffalo, Gowanda (homeopathic), Binghamton, Kings Park, L. I., Flatbush, Brooklyn, Central Islip, L. I., Ward's Island, New York City (two hospitals), Rochester, Ogdensburg, Poughkeepsie, Willard, Middletown (homeopathic).

Although these are hospitals for the insane, yet they are so large that opportunities for experience in general medicine are abundant. Each hospital is well equipped with clinico-pathological laboratory and apparatus, operating rooms, trained nurses, hydrotherapeutic and electrical devices and good medical libraries. The field for study in general medicine is excellent, and surgical operations of all kinds are frequently performed, either by resident or consulting surgeons. It is thought that many students who wish hospital experience and are unable to obtain it because of the relatively few places available in general hospitals, may be glad to learn that positions of this kind have been thrown open to them. It is believed that young physicians wishing hospital experience will profit by a year's residence in one of these hospitals, and such as desire to continue in special work would be eligible for appointments subsequently to salaried positions in the same service. No examinations will be necessary, but application must be made in person with good references, directly to the medical superintendent of any of the above-named hospitals, or to Dr. Frederick Peterson, President of the Commission in Lunacy, 4 West 50th St., New York City.

Beiträge zur Psychiatrischen Klinik is the title of a new periodical edited by D. R. Sommers. A full analysis of the first number appears in this issue of the JOURNAL.

SYLLABUS OF BACTERIOLOGY is the title of an interesting pamphlet issued free to physicians by the Palisade Manufacturing Company, of Yonkers. This is an interesting and helpful volume, and the publishers are to be congratulated on putting forth such valuable and at the same time, ethical advertising matter.

THE Eighth Annual Report of the Craig Colony for Epileptics has just been issued. Unlike many reports coming from similar institutions, it really tells something about the work and the progress of the fundamental ideas of the plan. We commend it as good reading and interesting, not dry and statistical.

DR. OPPENHEIM'S "Lehrbuch der Nervenkrankheiten," which has recently appeared in its third edition, is now translated into English, Italian, Russian and Spanish.

THE STATE BOARD OF CONTROL of the Iowa Hospital for the Insane, has made public the announcement of the resignation of Dr. Gershom H. Hill as superintendent of the hospital for the insane at Independence, Iowa. Dr. Hill's term expires in June, and he states in a formal resignation filed with the board of control that he will not be a candidate for reappointment at that time. This amounts to a resignation, since there is no question but that Dr. Hill, had he so desired, would have been continued in the capacity of superintendent at Independence, where he has been located for over twenty-one years.

Dr. Hill announces to the state board of control that it is his intention to go to the city of Des Moines when he leaves the hospital at Independence, and enter private practice as a specialist in insanity. He is a man of some sixty years of age, and the most of his life

has been devoted to the study of medicine, especially as applied to the diseases of the brain.

Dr. Hill was appointed first assistant at Independence in 1874, when he began his career as an institution man in Iowa. In 1881, seven years later, he became acting superintendent in the same institution, and has served in that capacity ever since, the board of control voting unanimously to retain him when they assumed control of the state institutions four years ago. Dr. Hill has grown gray in the service of the hospital at Independence, and he finds that the duties are becoming heavier for him than in former years. It is, therefore, for the sole reason of being relieved from the care and responsibility of his present office, and of having his time more at his own disposal that he resigns.

The board of control expresses great regret in the loss of Dr. Hill from the institution at Independence. For some time, however, they have known that this would be the case sooner or later, but not until now was the formal announcement made possible. There are already several candidates in the field, and a large number of others will probably be announced as soon as Dr. Hill's resignation is generally known. Judge Kinne, chairman of the board, stated this morning that the appointment of Dr. Hill's successor would not be made for some weeks to come in all probability, as the board wanted plenty of time to look about and decide upon an all-round competent man.

Dr. John C. Doolittle is a candidate for the place. Dr. Doolittle is first assistant at Independence at present, and would be in line for the position from the standpoint of promotion. Although Dr. Hill names no one in his resignation, he refers to the fact that those professional men under him at the hospital are well qualified and worthy of promotion. Dr. A. L. Warner, of Chicago, is also a candidate for the position. Dr. Warner is in Des Moines this week, scheduled to read a paper before the conference of the board of control and institution superintendents on "Institutions for the Insane in Other Lands." He has been engaged in institution work in Illinois in past years. Dr. William F. Wegge, of Milwaukee, is also a candidate for the place.

JUDGE LEVENTRITT last month discharged a damage suit brought against Drs. Austin Flint and A. Fitch for illegal detention of a patient at the Long Island Home at Amityville. The case was not even presented to the jury, and the plaintiff was compelled to pay costs and extra allowances for the defendants. It was a striking victory for the cause of the alienist and sanatorium physician.



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"Pediatrics," issue of November 1st, 1900. pages 349, 347, 338, 344.

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THE
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Original Articles.

THE KNEE-JERKS IN TRANSVERSE LESION OF THE
SPINAL CORD.*

By

WILLIAM ALDREN TURNER, M.D.,

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INTRODUCTION.

When asked by your President to communicate a short paper to this Society, it appeared to me that no neurological problem would form a more lucrative subject for discussion than the condition of the knee-jerks in transverse lesion of the spinal cord. The reflex phenomena consequent upon this lesion differ considerably according as they are studied experimentally or clinically; and the explanations of the varied symptomatology are numerous and offer a rich field for argument and debate. The subject also, I find, has engaged your attention from time to time in its different aspects during the past few years. "The State of the Reflexes in Supralumbar Lesion of the Cord," was the subject of a paper by Dr. Fraenkel and a discussion in 1897¹; it was incidentally mentioned by Drs. Fraenkel and Collins in a paper "On the Clin-

*A paper read before the New York Neurological Society on April 8, 1902.

ical Study of Some Reflexes,"² in 1900, and it was recently (1901) debated in connection with a communication from Dr. G. L. Walton upon "The Study of Spinal Fracture with Special Reference to the Question of Operative Interference."³

I propose to look at this subject rather from the experimental than from the clinical side, with the view of ascertaining how far the results of experiments upon animals may be applicable to the special phenomena of trans-lesion of the spinal cord in man; and to see whether the differences in the reflex phenomena, which are stated to exist, may not be brought into harmony with each other and explained upon general physiological principles.

As this subject has been a fruitful field for investigation and research, an extensive literature has gathered around it; but I shall deal only with a comparatively small part of the question, viz., the condition of the knee-jerks; as to go more deeply into it would involve the consideration of the whole subject of the reflex phenomena of the spinal cord, a matter more satisfactorily studied in the text-books of physiology.

Experimental Observations.—It is commonly stated that experimental cross section of the spinal cord above the lumbar enlargement in vertebrate animals leads to no immediate interference with the tendon reflexes; but that as time goes on after such operation, the knee-jerks become exaggerated, and the resulting paraplegia, which is at first of the flaccid type, assumes later on the rigid and spastic character, so commonly seen in old-standing cases of acute myelitis in man. In man, on the other hand, a fracture-dislocation of the vertebral column in the cervical and dorsal regions, is productive of permanent, flaccid paralysis of the limbs, and loss of the knee-jerks; and if the lesion be complete, no tendency at all towards rigidity or contracture.

A reference to the literature of the experimental side of the subject, however, shows, that the view expressed above is by no means universally accepted, and that much variation has been observed by experimenters upon the state of the knee-jerks, both immediately and some time after complete division of the spinal cord.

An early observation by Furbringer⁴ showed that trans-

section in the upper dorsal region in rabbits, was followed by lively knee-jerks, a tapping of the patellar tendon bringing about contraction of the quadriceps extensor muscle, dorsiflexion of the foot and an adductor jerk upon the same and on the opposite side.

The theory propounded by Rosenthal and Mendelsohn⁵, from a number of experiments on trans-section at different levels of the cord, necessitates for the existence of the reflexes the intact connection of the afferent and efferent reflex paths with the upper parts of the spinal cord, more especially with that portion lying between the *calamus scriptorius* and the cervical enlargement, the "cervico-bulbar region." Destruction of the cord in or about this neighborhood interferes with the transference of the afferent impressions to the efferent paths and abolishes the reflexes. The position held by these observers is that on this account, high trans-section of the spinal cord abolishes all tendon and visceral reflexes, weakens the plantar reflex and leads to an enduring failure of the skin reflexes.

Some interesting experimental observations by Gad and Flatau⁶ on dogs may here be mentioned. A brief summary only of their results is given.

These observers had no dogs in which the knee-jerks were absent during the whole period of life after the trans-section, nor any dogs in which the absence of the jerks lasted for a long time. In all the cases of high trans-section the knee-jerks were weakened, and in some temporarily abolished.

Tapping the patellar tendon in the cases in which the knee-jerks were absent sometimes caused a little urine to be expelled from the bladder; and in others there were long periods during which the knee-jerk was elicited only as a weak muscular contraction, without any extension of the limb. Comparisons were made with dogs in which the cord was divided between the dorsal and lumbar regions. In the latter, the knee-jerks were always easily obtained—a weak tap on the tendon producing an ordinary extension of the limb.

From these observations it is obvious that a weakening, or temporary abolition, of the knee-jerks is more commonly noted after high than after low trans-sections; but that in no

case was a permanent abolition of the jerk observed.

But the most elaborate experiments upon this subject are those of Sherrington⁷. He has worked chiefly with monkeys, and has not only studied the condition of the knee-jerks, but has entered fully into the details of all the reflexes belonging to the portion of cord isolated by a trans-section. His main conclusions are: following trans-lesion in the region of the cervical enlargement, the skin reflexes are temporarily abolished; the knee-jerks disappear to reappear in the course of days or even weeks; and in some monkeys, as also in cats and dogs, the knee-jerks are not even temporarily abolished even in sections as high as a cervical one. His conclusion is that "shock" does not last more than a few days, but that the permanent effects of the lesion upon the isolated portion of cord are comparable to the "isolation-alteration" of Munk. This condition is probably well marked in monkeys. In man, "shock" may be more protracted than in animals, and the "isolation-alteration" speedy and severe. The prolonged loss of the knee-jerk in cases of high transverse lesion in man would seem to bear this out.

The influence of "shock" in laboratory trans-sections seems to be particularly small. As pointed out by Sherrington its effects when present are limited almost entirely to the distal parts, little, if at all, headward of the lesion; and there is little difference in the severity of the shock whether the section is in the lower thoracic, or in the cervical regions.

We now come to the suggestive experimental work of Marguliés⁸. This observer varied his experiments by producing the lesion of the cord in one of two ways, either by simple trans-section with a knife, or by squeezing or crushing the cord with a blunt instrument. His conclusions are remarkable. In all the cases (rabbits and dogs) in which the cord was cut across with a knife the knee-jerks were increased and rigidity and contracture of the hind limbs ensued.

In those in which the cord was crushed by some blunt instrument the palsy was of the flaccid type and the knee-jerks remained absent for at least a week. In a dog the jerks remained in abeyance during the three days the animal lived after the operation. In one animal the knee-jerks returned

on the second day, but here the lesion was incomplete.

From these facts the deduction is made, that flaccid palsy and loss of the tendon reflexes are dependent upon the way in which the lesion is effected, and that the duration of the symptoms is in direct relation to the severity of the lesion and the position of the animal in the vertebrate scale.

It would appear from the experimental data just enumerated that a considerable discrepancy exists between the observations of different investigators, between the effects of trans-lesion in different animals as well as in those of the same species, and between the effects of trans-section even at the same level of the cord. "In the monkey," says Sherrington⁹, "spinal trans-section usually depresses the knee-jerk for a longer time than in the cat or dog. Occasionally in the monkey, after trans-section at the lower thoracic region, the jerk is not elicitable for a week or so. In the cat and dog it is elicitable in a quarter of an hour or less. Spinal trans-section above the lumbar enlargement renders the jerk, after the short period of depression, more brisk than normal."

In the high trans-sections through the cervical enlargement, a crossed adductor reflex is easily and early obtained, but it does not appear as if any material difference exists in the period of absence or depression of the jerk in high (cervical) or in low (dorsal) trans-sections.

Original Experiments.—With a view to investigate this subject more fully, I have carried out a number of experiments upon monkeys during the past few months, in conjunction with Dr. Purves Stewart.

But before describing the recent experiments, attention may be called to two experimental trans-sections which were made many years ago when working with Dr. Ferrier upon experimental lesions of the cerebellum.

A. (No. 2 in the table). The spinal cord of a Macaque monkey was severed completely at the level of the eighth dorsal root. Immediately after the operation the knee-jerks were capable of being elicited as before it. There were the usual paraplegic symptoms as regards motion and sensation. During the four months that the animal lived after the operation,

the knee-jerks gradually increased in association with considerable rigidity and contracture of the lower limbs.

B. (No. 3 in the table). The spinal cord was completely divided at the level of the sixth dorsal nerve. Both knee-jerks were readily elicited immediately after the operation, if anything, more markedly than before. These observations were made for twelve days after the operation.

The recent experiments are the following:

C. (No. 4 in the table). Rhesus; complete trans-section of the spinal cord at D iv; immediately after recovery from the chloroform the knee-jerks were present and as brisk as before the operation, the lower limbs were paralyzed and flaccid.

There was a crossed adductor jerk on both sides. There was no change in the state of the knee-jerks during the succeeding five days.

As this experiment merely confirmed the previous observations it was decided to modify the operations by performing a preliminary hemi-section, examining the jerks and then completing the trans-section.

D. (No. 5 of the table). Rhesus: The cord was exposed at the level of D vii, and a right hemi-section performed. On recovery from the anesthetic, both knee-jerks were tested and appeared equal and of normal range. The monkey was again anesthetized, and the section completed. On retesting, both knee-jerks were equal and perhaps even brisker than normal. One hour later both jerks were distinctly exaggerated and accompanied by a crossed adductor jerk. Total flaccid paraplegia.

E. (No. 6 of the table). Rhesus: The cord was exposed at the level of D iv, and the right side hemi-sected; on recovery both knee-jerks were brisk, with a crossed adductor jerk in each instance.

The section was then made total. On emerging from the anesthetic, both knee-jerks were exaggerated with crossed adductor jerks. An hour later the jerks were as before. There was no change in the jerks, or in the flaccid paraplegia during the next two days.

F. (No. 7 of the table). Sooty monkey. Cord exposed

and right side hemi-sected at level of D iii. With the return of the conjunctival reflex, the knee-jerks were obtained equally on both sides. Anesthesia was reëstablished and the section completed. In this case the knee-jerks were obtained with some difficulty up to half an hour after the operation. The right jerk was present with a crossed adductor jerk, the left elicited only with difficulty. Further observations were impossible as the monkey died during the night.

From these three experiments it is seen that a preliminary hemi-section did not affect the knee-jerk either upon the same or opposite side, at all events during the brief period during which the examination was made. The knee-jerks, however, appeared to be less easily obtained, the higher the level of the trans-section. A further experiment was therefore carried out.

G. (No. 8 of the table). Rhesus. Intradural trans-section at the level of D i. Immediately after the operation both jerks were present, but diminished in intensity, and failed to be elicited a few minutes later. But both crossed adductor jerks and the superficial anal reflex were obtained. Ten hours later the knee-jerks were still absent, and they were not obtained up to the death of the animal three days later, though the crossed adductor jerks were elicited throughout.

H. (No. 9 of the table). Sooty monkey. In this case the spinal cord was tightly ligatured at the level of C viii. This was done with a view to imitate, as far as possible, what occurs in fracture dislocation in the human subject. Both knee-jerks were only feebly elicited on recovery from the anesthetic; but the following reflex movements were well seen, a crossed adductor jerk, and the superficial anal reflex. Half an hour later the knee-jerks could not be elicited, nor were they obtained during the next seven hours.

As it seemed possible that the method of severing the spinal cord—by knife or by ligature—might have some influence over the resultant phenomena, a further experiment was done to control the previous trans-sections in the lower and mid-dorsal regions.

I. (No. 1 of the table). Rhesus. A ligature was tied tightly round the cord at D ix. The knee-jerks immediately

after the operation were brisk with the presence of a crossed adductor jerk. Half an hour later, on retesting, the jerks were only elicited with difficulty, and it seemed as if exhaustion of the jerks was easily produced, for the reason that the first tap upon the tendon resulted in a fair jerk, but subsequent taps failed to show any effect. The adductor jerks and the superficial anal reflex were brisk. Ten hours later the same phenomena were noted; apparently ready exhaustion of the jerks on repetitions of stimuli. On the two days following the operation, the jerks were brisk.

One main conclusion is obvious from these experiments, viz., *that the presence or absence of the knee-jerk is influenced by the level of the trans-section*, and, perhaps of a subsidiary nature, that the method of severing the cord would appear to have some influence in determining temporarily the state of the jerks.

For the closer study of this question, I have separated in the accompanying table, the knee-jerks and the other reflex phenomena; as it would appear to be important to consider

EXPERIMENTAL TRANS-SECTION IN MONKEYS.

| NO. | ANIMAL | LEVEL | METHOD | KNEE-JERKS | OTHER REFLEXES | DURATION |
|-----|--------|--------|---------------------|----------------------------------|--------------------------------|-----------|
| 1 | Rhesus | D ix | ligature | brisk after temporary depression | x add. jerk, superficial anal | 4 days |
| 2 | Rhesus | D viii | knife | present and increasing | | 4 months |
| 3 | Rhesus | D vi | knife | present and brisk | | 12 days |
| 4 | Rhesus | D vii | hemisection section | present and brisk | x add. jerk | few hours |
| 5 | Rhesus | D iv | knife | present and brisk | x add. jerk | 5 days |
| 6 | Rhesus | D iv | hemisection section | present and brisk | x add. jerk | 2 days |
| 7 | Sooty | D iii | hemisection section | only with difficulty, R. L. | x add. jerk | few hours |
| 8 | Rhesus | D i | knife | not obtained | x add. jerk, superficial anal. | 3 days |
| 9 | Sooty | C viii | ligature | not obtained | x add. jerk, superficial anal. | 7 hours |

separately true reflex movements and those which may be regarded as depending upon neuro-muscular tonus.

As soon as the monkeys emerge from the chloroform anesthesia, if the lesion has been made at or below the level of the fourth dorsal segment, the knee-jerks are elicited, and may even be more vigorous than previously, a crossed adductor jerk is always readily obtained, as well as frequently on the same side, and pricking the perineum leads to protrusion and contraction of the sphincter ani. Micturition, which may at first have been temporarily in abeyance, occurs at definite intervals and defecation is regular. Patulousness of the anus is rare, and if it occurs, is of quite temporary duration (Sherrington). The limbs are in a state of flaccid palsy; as time goes on rigidity and contracture ensue and the knee-jerks become decidedly exaggerated. Sensation is abolished in the parts below the level of the lesion.

In the higher trans-sections, those made about the level of the second and third dorsal segment, some difficulty was experienced temporarily in eliciting the jerks. In Exp. 7 the right jerk was more readily obtained than the left; and both seemed to be easily exhausted, that is to say, frequent and repeated attempts to elicit the jerks, failed to evoke any response after the first or second tap. But from both patellar tendons a crossed adductor jerk was easily brought about. Defective knee-jerks were present up to half an hour after the operation.

In still higher cases—trans-section at the level of the first dorsal and eighth cervical segments—the knee-jerks could temporarily be obtained with difficulty, but in both instances they entirely failed within the first quarter or half an hour after the trans-section.

This is readily explained on the hypothesis that the spinal segments retain some degree of autonomy after severance from their connections, however high the lesion may be. This also accounts for what is now generally admitted, that the knee-jerks may be present for one or two minutes after decapitation.

A brief comparison may now be made with the clinical picture presented by a case of fracture dislocation at the level of the eighth cervical segment. In addition to the complete

motor and sensory paralysis of the lower limbs, the knee-jerks are not obtained; the bladder requires to be evacuated by the catheter; the anus is patulous and does not grip the examining finger, and there may possibly be incontinence of feces; there is usually marked priapism. On the other hand, a plantar reflex of the extensor type will be obtained on stroking the sole of the foot, and the superficial anal reflex will be present on pricking the skin of the perineum.

The paraplegia is of the flaccid type, and if the trans-section is complete, remains so, and the knee-jerks do not return.

Various theories have been advanced to explain the condition of flaccid paralysis and loss of the knee-jerks in complete trans-sections in man.

Many of them, though supported by considerable pathological evidence, may be at once dismissed. For example, all those cases have been eliminated* in which there was obvious interference with the reflex arc in its intra-spinal course, as well as those which showed associated degeneration of the anterior roots and of the peripheral nerves. No reference either is made to those cases, and there are several on record, in which a descending myelitis, or a coexistent lumbar myelitis was present. In this way the number of cases presenting the salient features of flaccid palsy and loss of the knee-jerks is reduced to those of sudden traumatic lesion (usually fracture dislocation of the vertebral bodies) in or about the region of the cervical enlargement.

The most commonly accepted explanation is the Bastian-Jackson¹⁰ view, which ascribes the loss of the reflexes to the cutting off of cerebral and cerebellar influence. The acceptance of this explanation depends upon the completeness of the trans-section and the permanent abolition of the tendon jerks. As regards the latter point, I believe the evidence is conclusive, viz., that in no case in which the cord has been completely severed has any return of the tendon jerks been observed. This statement is based upon the writings of Bruns¹¹, who has analyzed most of the recorded instances of this condition. But evidence will be brought forward pres-

*An extensive bibliography and criticism of the recorded cases will be found in *Neurol. Centralbl.* 1897, p. 72.

ently to show that abolition of the knee-jerks even for prolonged periods, may be occasioned by anatomically incomplete trans-sections, proved post-mortem to have been such.

Bastian's explanation further implies that the knee-jerk is directly dependent upon the function of the cerebellum in maintaining the muscle tonus, acting upon and through the spinal centers. Removal of the cerebellum should therefore theoretically on this view produce hypotonia, and consequently loss or impairment of the knee-jerks. Now atonia has been stated by Luciani¹² to be one of the phenomena following cerebellar extirpation, though he does not seem to have tested the knee-jerks in this connection. If the state of the knee-jerk indicates the degree of neuro-muscular tone, as is generally admitted to be the case, then its exaggeration, after cerebellar extirpation, as shown by Ferrier and myself¹³, as well as by Risien Russell¹⁴, would prove not atonia, but a state of hypertonicity, following complete removal of this organ.

It is difficult also to believe that if the cutting off of the combined cerebral and cerebellar influence abolishes permanently the tendon jerks in man, why their abolition is not more constantly observed after cross section of the spinal cord in the higher vertebrate species such as the monkey. But the evidence from experiments already quoted shows that this is not a necessary, nor indeed a common, result; and that it depends largely upon the level at which the section is performed.

All observers are agreed that even in those animals in which the knee-jerks are temporarily abolished or weakened, their reappearance is merely a question of time, but there are many instances, even in apes, in which no interference with the reflex activity has been observed, even temporarily, after spinal trans-section.

Incomplete Lesions.—Some valuable information upon the loss of the knee-jerks may be obtained from a study of partial trans-lesion of the spinal cord following fracture dislocation, that is to say, cases in which the symptoms indicate a complete physiological trans-section for a period, but which are shown by subsequent post-mortem examination to have been anatomically incompletely divided. Instances of partial

trans-lesion with loss of the knee-jerks have been recorded by Thorburn¹⁵ and others, but without sufficiently definite pathological data. I propose first to refer to a case already recorded by Dr. Purves Stewart¹⁶, examined pathologically in detail. Briefly the history of this case is as follows:

A woman, *aet.* 28, fell out of a window, a distance of about twenty-five feet, and dislocated the body of the fifth cervical vertebra. This was followed by complete flaccid paraplegia and anesthesia below the level of the third rib, and partial paralysis of the upper limbs. The breathing was entirely diaphragmatic. The knee-jerks were absent, as also were the abdominal and epigastric reflexes. The plantar reflex was present and of the extensor type. There was complete retention of urine. The superficial anal reflex was present on pricking the skin of the perineum; but the deep anal sphincter was paralyzed; the anus "yawned" after withdrawal of the examining finger. The leg muscles responded readily to faradic excitation.

Up to forty days after the injury, the symptoms indicated a complete physiological trans-section of the spinal cord, but at this date, the return of the knee-jerks, at first slightly, and then with greater intensity, seemed to point to an anatomically incomplete lesion. With the return of the knee-jerks, there ensued some contracture and rigidity, but without any voluntary power over the lower limbs. The patient died sixty-eight days after the accident.

The examination showed that the cord, at the seat of compression, was reduced to a mere ribbon, measuring about 1 mm. thick; while microscopically, a thin strand of degenerated white fibers, situated peripherally, joined the proximal and the distal segments. It was obviously not a complete spinal trans-section.

The second case, not previously recorded, was under the care of my colleague, Dr. Howard Tooth, in the Queen Square Hospital, and I am indebted to him for permission to publish it.

The patient, G. M., while working on a ladder, lost his balance and fell from a height of twelve feet, striking his back

and shoulders; there resulted a paraplegia, and anesthesia from the level of the umbilicus on the right side, and from a point two inches below on the left side. There was retention of urine requiring catheterization. The knee-jerks were not obtained, the abdominal skin reflexes were also absent, but the plantar reflex was present and of the extensor type. There was tenderness on pressure over the sixth, seventh and eighth dorsal spines. These observations were made twelve days after the injury on his admission to the Hospital for the Paralyzed and Epileptic; and the symptoms persisted, without any material change, for four months, when the knee-jerks were noted to have returned. Three months later (*i.e.*, seven months after the accident) the legs had lost their flaccidity and showed rigid extension and occasional jumping movements. There was also some voluntary power over the toes and of rotation at the hips. The knee-jerks were present and the plantars were of the extensor type. Four months later—a year after the accident—there was no return of sensation, but the patient was aware when his legs were moved. He died sixteen months after the accident.

Dr. Collier, who examined the cord after death, reports as follows: There was a fracture dislocation of the body of the eighth dorsal vertebra. Between the eleventh and twelfth dorsal roots there was a depression in the cord about 1 cm. wide, the cord being here reduced to a mere ribbon. Microscopically there was no portion of the lesion free from medullated nerve fibers, undergoing degeneration. The proximity of the ends of some of the fibers suggests that there might have been continuity, though no continuous axis cylinders could be detected. The spinal segments showed absolutely no change to the Nissl reagents, except in immediate relation to the site of lesion. The usual ascending and descending degenerations were noted.

The points of special significance illustrated by these two cases, well examined both clinically and microscopically, are, in relation to the matter attracting our present attention, the following:

1. The symptoms, as regards motion, sensation and the

type of palsy, are indicative of a complete physiological trans-section of the spinal cord, above the lumbar enlargement.

2. The immediate and prolonged loss of the knee-jerks in the first case for forty days, in the second for four months, with retention of plantar reflexes of the extensor type.

3. With the return of the knee-jerks a tendency to muscular rigidity, contracture and spasm though not necessarily of any voluntary power.

4. The incompleteness of the anatomical lesion with pronounced descending degenerations in the crossed pyramidal and antero-lateral descending tracts.

5. And, finally, the absolutely healthy appearance of the cells of the lumbar enlargement according to the Nissl method.

The Plantar and Skin Reflexes.—This is a convenient place to refer briefly to the condition of some other reflexes, viz., the superficial skin, and the plantar reflexes. The state of the skin reflexes after trans-section of the spinal cord is variable. In some, they are abolished, in others retained, and at times they are increased. As even in healthy individuals the skin reflexes are an uncertain quantity, little assistance is rendered by them in this connection. Very different, however, are the lessons to be learned from an examination of the plantar reflex. This reflex is present in trans-sections above the lumbar enlargement in man. In the cases recorded prior to the description by Babinski of the flexor and extensor types, the general statement was made that a plantar reaction was present; but in those recorded subsequent to that date, the statement is definitely made that the plantar reflex was of the extensor type. In other words, trans-section of the spinal cord is not followed by abolition of so pure a reflex as is the plantar reaction. From the experiments, which I have recorded in this paper, the following other reflexes may be added to the list of those which are not abolished by trans-section. The crossed adductor, and the superficial anal or perineal reflex. This latter reflex has been found present also in trans-lesion in man.

CONCLUSIONS.

The conclusions which it is possible to draw from a consideration of the foregoing experimental and clinical observations may be briefly stated as follows:

1. The condition of the knee-jerks after experimental trans-section of the spinal cord in monkeys is not constant: the higher the level of the trans-section, the greater the likelihood of the knee-jerks being temporarily diminished or abolished. In these observations there is found a confirmation of the experimental data given by Rosenthal and Mendelsohn and by Gad and Flatau in dogs.

2. No such difference according to level is found in trans-sections of the human spinal cord; all complete trans-sections above the lumbar enlargement lead to abolition of the knee-jerks, most probably of a permanent character.

But temporary abolition of the knee-jerks, sometimes for a prolonged period, may follow incomplete anatomical trans-section, although the other coexistent phenomena point to a complete physiological lesion.

3. In man, as experimentally in monkeys, although the knee-jerks may be abolished, some true reflex actions are permanently maintained; such are the plantar and the superficial anal reflexes; and, notably in monkeys, the crossed adductor jerks.

4. Accepting the view that the state of the knee-jerk indicates the degree of the neuro-muscular tone, if some other muscular action dependent upon "tone" is found to be abolished in spinal trans-section as well as the knee-jerks, it may legitimately be argued that neuro-muscular tonus is impaired or abolished in physiological trans-section; such other atonic paralysis is, I submit, to be found in the "yawning" of the anus, which has been described.

5. Therefore, we may conclude that in spinal trans-section in man, and in high trans-sections in monkeys, actions dependent upon neuro-muscular tone are permanently or temporarily abolished; but that true reflex movements are not impaired.

6. The variation which exists in the phenomena following

lesion at different spinal levels in dogs and monkeys, the transitory effects of such lesions as regards the knee-jerks, as well as the temporary abolition of the knee-jerks in incomplete lesions in man, would preclude the general application of Bastian's theory; for there is nothing yet recorded to negative the view that the mechanism which produces loss of the knee-jerks in man, or their temporary abolition in the lower animals, is not to be found in the spinal cord itself.

7 The explanation of the discrepancy which exists between the results of trans-section in laboratory animals and man may be explained by the greater autonomy of the spinal segments in maintaining neuro-muscular tonus as we descend the vertebrate scale.

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THE LOCALIZATION OF THE REFLEX MECHANISM.*

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The study of the reflexes in complete lesion of the cord is of interest both on account of its value in diagnosis and pathology, and on account of its bearing upon the localization of the reflex mechanism. The present tendency in favor of cerebral reflex centers is largely due to Bastian's observation that the knee-jerk is abolished by complete transverse lesion, an observation which may have to be modified by the experiences of Brissaud, Raymond and Cestan, which seem to indicate that gradual destruction of the cord, even though complete, may give rise to spastic paralysis. But acceptance of cerebral reflex centers does not quite in itself solve the problem. In fact, the reflex conditions found in disease are too varied to be explained on the basis of single centers, whether cerebral or spinal. It seems probable that we shall be forced to assume, with Grasset, that there are in man at least three regions, namely, spinal, basilar and cortical, all of which are possessed of centers for tonicity and reflex, all normally in play in the healthy adult, the higher supplementing and controlling the lower more and more as the animal scale is ascended, though not absolutely replacing them as claimed by Crocq. If this is true, the lower centers in the healthy human adult may remain comparatively, or quite, quiescent, while the higher are in the full exercise of their sway; but when the control of the higher centers is interrupted by disease, it may well be that the lower centers resume their activity, and with increasing force, through lack of cerebral influence.

An analogous condition is found in the vaso-motor control. If the lumbar region is cut off from the bulbar vaso-motor centers the blood vessels of the lower extremities dilate, and the superficial temperature is raised. In the course

*Read in connection with the paper of Dr. Turner at the meeting of the New York Neurological Society, April 8, 1902.

of time the vessels resume their tone, and the normal temperature is restored. Physiologists explain this phenomenon, when produced experimentally in lower animals, by supposing that rudimentary, or at least inactive, vaso-motor centers in the cord, take up their function only when the bulbar centers become ineffective, and there is no reason to doubt that a similar, though perhaps more complicated, process takes place in the human being.

Among the apparently contradictory propositions whose reconciliation is impossible on the supposition of single centers, and difficult even with the aid of multiple centers, may be found the following, some of which are established, while others require further verification.

(1) In cerebral hemorrhage the paralysis may be at first flaccid, and the reflexes abolished (Dana and others).

(2) If the connection between the brain and the lumbar cord is permanently severed, the knee-jerk does not return (Bastian and others), but the plantar reflex may return (Fränkel).

(3) If the destruction of the upper cord is gradual, the knee-jerk does not disappear but becomes exaggerated (Brisaud).

(4) If pyramidal transmission is reestablished, the knee-jerk returns, and under certain circumstances is exaggerated; the cutaneous reflexes (unless the Babinski is deemed a cutaneous reflex) are diminished if the patient is an adult, preserved, if a young person.

(5) The Babinski reflex may appear at the onset of high lesion during the period of flaccidity and absence of all other reflexes (Stewart and Turner, Walton and Paul).

(6) In earliest infancy, even in infants prematurely born, extensive reflex movements of the feet and toes are present. (The fact that some observers find in these movements a Babinski reflex, and that others find them indeterminate, with perhaps a predominance of extension and separation of the toes, adds another complication to the problem.)

(7) These reflex movements of infancy are gradually replaced, probably after two years (Morse) by the constant flexor reflex of adult life.

(8) The cremasteric reflex is established in early infancy, (though its systematic test at this age is rendered difficult by the mechanical conditions, particularly the non-emergence of the testicle). This reflex becomes very active in early life, and is later replaced by, or modified to, the normal adult reflex.

(9) The knee-jerk is very active in infancy. (In infants I have recently examined with reference to this discussion, through the kindness of Drs. Richardson, Rotch and Green, I have found that the knee-jerk is difficult or impossible to elicit in prematurely born infants, and sometimes difficult to elicit at full term. I have generally been able to obtain it, however, in the first few days of life, and have found it steadily increasing in activity, and becoming very active, at, for example, eighteen months. This reflex is best obtained in infants by holding the thigh at right angles with the trunk and supporting the lower leg in the hand, at right angles with the thigh. The tap is best made very near the patella with a small rubber percussion hammer.)

Can these, and other, observations be reconciled with the supposition of single centers, either in the cord or in the brain? No. If, for example, a center for the knee-jerk exists in the cord alone, why is the knee-jerk permanently lost when the cord is suddenly severed from the brain? Even the fact that it is temporarily lost under these circumstances is not readily explained on the assumption of simple spinal centers. The theory of shock, as maintained by Gowers, leaves much to be desired. The objection of Stewart and Turner is well taken, that such shock should also restrain the Babinski reflex, which appeared, for example, in their case of spinal fracture on the day of the accident, while the knee-jerk was abolished for two weeks.

If a center for tendon reflexes exists in the brain alone, why should the knee-jerk be always exaggerated when the connection with the cord is reestablished, even though that connection is a faulty one? Crocq's supposition that irritation of the pyramidal fibers under these circumstances adds to the reflex irritability of the basilar centers, is vague and

unsatisfactory. It would be strange if pyramidal fibers not sufficiently conductive to convey the least trace of voluntary motion, should readily transmit a heightened reflex stimulus. In the endeavor to explain the sluggish cutaneous reflexes sometimes coexisting with exaggerated tendon reflexes he assumes that the same pyramidal irritation which increases the activity of the basilar centers, inhibits that of the the cortical centers, an assumption which shows the arbitrary nature of his theory.

With regard to the cutaneous reflexes, if it is true that the plantar reflex can appear when the cord is completely and permanently separated from the brain, there must be a center for this reflex in the cord, but there must be also a controlling center for this reflex in the brain, or it would not be even temporarily abolished by cerebral disease, or by fracture of the spine.

The attempt to explain the varied conditions is not altogether satisfactory even with the assistance of multiple centers, but it may proceed perhaps somewhat on these lines: Let us suppose with Crocq that in the human adult the controlling centers for cutaneous reflex and for muscular tonicity, have risen to the cortex, and that those for the knee-jerk have risen to the basilar region. But let us modify this theory by that of Grasset, that the lower centers, meantime, have not entirely resigned their function. May not a key to the most serious difficulty (namely, the varying predominance of the tendon and the cutaneous reflexes) be found in the following considerations? (a) Since the centers for the skin reflexes have reached a higher plane, their lowest centers (the spinal) will be less readily reëducated than those of the tendon reflexes, whose controlling centers have risen only to the basilar region. (b) Since the tendon reflexes require a certain degree and balance of muscular tonicity, they may sometimes, in default of this quality, be outstripped by the cutaneous reflexes, for which tonicity is a matter of secondary importance.

In infancy the reflex movements of the toes are of spinal origin, before the permanent normal relations with the brain are established. After these relations are established the higher centers preside over, and maintain, the normal cutan-

eous reflexes of adult life, the spinal centers meantime becoming inactive, more inactive, perhaps, than the spinal tendon reflex centers, since the cutaneous reflex mechanism has reached the higher plane. If the cerebral connection has been injured, with partial reestablishment, the cutaneous reflexes disappear until the spinal centers resume their function, which they are able to do actively if the patient is young, but sluggishly, if at all, if he be an adult. The appearance of the Babinski in adult life under these circumstances must be regarded, not as an exaggeration of the normal plantar reflex, but as a peculiar reflex, present only under pathological conditions. The fact that the Babinski appears more promptly than the exaggerated knee-jerk, and even sometimes when no knee-jerk is present, must be explained by the fact that no special adjustment of muscular tonicity is required for its production, and by the probability that its controlling center is spinal, and that its nature is so elementary that it is ready, like the active reflexes of the frog, to spring into existence immediately upon the withdrawal of cerebral control. The active reflex movements of the feet and toes at or before full term, and the persistence of the plantar reflex in case of permanent complete transverse lesion of the cord, may be similarly explained.

The same arguments can be followed with the knee-jerk up to a certain point: if the knee-jerk is temporarily lost, as in case of apoplexy or of spinal fracture, it is because the cerebral reflex center is rendered ineffective either by direct injury or by its functional separation from the lumbar region. In this event the knee-jerk returns, and becomes exaggerated, because the spinal centers now become active, and abnormally so, resuming, without inhibition, a function hitherto in abeyance.

The point of divergence of the knee-jerk from the plantar reflex appears first in case of sudden, complete severance of the cord. In this case the knee-jerk does not return, but it would appear that the plantar reflex may do so. The other point of divergence is in the newly-born, particularly the prematurely-born infant, in which the knee-jerk is faint or want-

ing, while the cutaneous reflex movements are active. These two peculiarities might lead to the inference that there are no centers in the cord for the knee-jerk, but they do not necessarily establish that proposition for this reason: in order to elicit the knee-jerk a certain degree of tendon stretching as well as a certain degree of muscular tonicity is essential, and even a certain balance of tonicity must exist between the flexor and extensor group of muscles, and even then the knee-jerk is aided by reinforcement (whether this procedure acts by increasing the muscular tonicity without altering its balance, or whether it acts by readjusting the control, for example, by withdrawing the inhibition of the highest cerebral centers). The permanent loss of knee-jerk in case of sudden severance of the cord may be due then, to the inability of the spinal centers for tonicity to resume their function before the muscles have lost their power to respond. That these conditions are sometimes reestablished, namely, when the destructive process has been a slow one, is indicated by Brissaud's case of spastic paralysis in which a long segment of the cord had been reduced to a mere fibrous thread by tubercular process. Similarly, in the prematurely-born infant, the spinal centers for the knee-jerk may be unable to act until the cerebral centers control the tonicity. Hypertonicity, rather than lack of tonicity, may prevent the reflex at this period, since the spinal centers for tonicity are doubtless in force at this stage, their activity being evidenced by the tendency to rigid flexion of the limbs in the premature infant. Or perhaps hypertonicity of the flexor groups, according to the law of Crocq, inhibits the tonicity of their antagonists, the extensors. The absence of knee-jerk in certain cases of long-standing infantile cerebral hemiplegia or diplegia with contracture is doubtless due to similar cause. However this may be, it is probable that the spinal centers preside over the tendon reflex of early life, but are gradually overshadowed by cerebral control.

If it is true that complete transverse lesion, when of gradual onset, may produce spastic condition with increased knee-jerk, we must assume that the spinal centers of tonicity can

gradually become reëducated during the time that the cerebral centers of tonicity are losing control.

The selection of certain regions in the brain as a basis for the line of analysis suggested in this somewhat sketchy discussion, is not intended to be final. We are hardly in position at present to attempt the exact localization of the neurones through which these stimuli pass. But whether, for example, the cerebellum plays the important part assigned it by Bastian, or whether the red nucleus and its descending fibers occupy a prominent place, as the studies of Collier, Buzzard, and others would indicate, it falls in line with the modern interpretation of the various cerebral functions to assume that the reflex mechanism has multiple relations. In fact, a simple change of base on the part of these centers from the cord to the brain, would imply that a mechanism only little more intricate than that which suffices for the elementary functions of the frog, is able to control the complicated reflexes of the human organism.

THE ACOUSTIC TRACT.

By M. ALLEN STARR, M.D., L.L.D.

Diagram of the Auditory Nerve—Cochlear division.

The central connections of the cochlear division of the auditory nerve, the portion of the eighth nerve concerned in true auditory impressions, are shown in the diagram.

The neurone-bodies of which these fibers are the axones lie in the spiral canal of the cochlear.

AC, the acoustic nerve fibers, enter the side of the medulla in a large trunk. We can distinguish fourteen different sets of fibers. Many of these fibers (1-8) penetrate the medulla opposite the entrance of the nerve. Others (9-14) turn upward on entering, and penetrate the pons at a little higher level. These various fibers pass to different destinations; 1 crosses through the olive, turns upward in the interolivary tract and enters the opposite lemniscus, and passes up in it; 2 terminates about a neurone-body in the ventral nucleus (VEN). From this body an axone arises which crosses to the opposite side and turns upward in the lemniscus; 3 terminates about a neurone-body in the ventral nucleus (VEN). From this body an axone arises which passes upward in the lemniscus of the same side; 4 terminates about a neurone-body in the ventral nucleus (VEN). From this body an axone arises which passes about the outer side of the medulla through the tuberculum acusticum (T) and thence through the formatio reticularis of the medulla to the raphé, where it crosses to the opposite side and turns upward in the lemniscus; 5 terminates about a neurone-body in the dorsal nucleus or tuberculum acusticum (T). From this body an axone passes through the formatio reticularis into the lemniscus of the same side and turns upward in it; 6 terminates about a neurone-body in the dorsal nucleus (T). From this body an axone passes through the formatio reticularis, crosses in the raphé and enters the lemniscus of the opposite side, turning upward in it; 7 terminates about a neurone-body in the dorsal nucleus T. From this body an axone passes across the floor of the fourth



ventricle in the *striæ acusticæ* to the *raphé*, turns downward in it, crosses to the other side, enters the *lemniscus* and turns upward in it; 8 passes through the dorsal nucleus into the *striæ acusticæ* and accompanies 7 in its course.

The ventral nucleus of the auditory nerve consists of a long column of cells which extend upward into the pons. Hence in a section through the lower half of the pons the ventral nucleus is still visible (VEN) and the fibers ascending from the auditory nerve trunk to terminate in or to pass through this nucleus (fibers 9-14) are easily traced. The course and ending of these fibers is as follows:

No. 9 turns inward and ends about a neurone-body lying in the upper olivary nucleus (OL). From this body an axone arises which crosses the median line in the trapezium, enters and ascends in the opposite *lemniscus*; 10 terminates about the neurone-body in the ventral nucleus, whence a new axone arises and passes to the olivary nucleus, terminating about a neurone-body there. From this neurone-body an axone arises which joins 9 and pursues the same course; 11 passes through the ventral nucleus and ends about a neurone-body in the mass of gray matter lying adjacent to but ventral of the *lemniscus*, and dorsal of the olivary nucleus. This is the trapezoid nucleus. From its neurone-bodies axones arise, some of which enter the *lemniscus* of the same side, but many of which cross the median line to enter the *lemniscus* of the opposite side and ascend in it; 12 terminates in the ventral nucleus about a neurone-body. This body sends its axone to the collection of neurones lying within the deep transverse fibers of the pons, the trapezoid body. These neurone-bodies in turn send their axones into the *lemniscus* of the same and of the opposite side; 13 terminates about a neurone-body in the ventral nucleus. The body sends an axone directly into the *lemniscus* of the same side; 14 passes through the ventral nucleus and crosses in the trapezoid from the opposite side, where it turns upward in the *lemniscus*.

It is thus evident that all the fibers of the acoustic nerve, so far as its cochlear division is concerned, transmit their impulses into the *lemniscus* of the same or of the opposite side.

The trapezoid fibers may be termed the acoustic decussation or chiasm, and, as in the optic chiasm, the majority of the fibers cross to the opposite side (X). The termination of fibers ascending in the lemniscus is very complex. (a) Some fibers terminate about the cells of the nucleus lemnisci in the pons (Nu) which nucleus in turn sends axones to the corpora quadrigemina of the same and of the opposite side (15). (b) Some fibers terminate about the large quadripolar cells of the posterior corpus quadrigeminum (16) (CQP). (c) Some fibers terminate about the large cells of the first layer of cells in the anterior corpus quadrigeminum (17) (CQA). (d) Many fibers terminate about neurone-bodies in the corpus geniculatum internum (CI), whence new axones arise which pass to the cortex of the temporal lobe (TEM). (e) Some fibers pass directly through the internal capsule from the lemniscus to the temporal lobe.

Since each of the nuclei in which lemniscus fibers terminate is connected with motor mechanisms as well as with the cortex of the temporal lobe, it is evident that the auditory impulses can awaken numerous reflex and automatic acts as well as conscious sensations of hearing. Hence the act of turning eyes and head or assuming postures of strained listening and other automatic acts are made possible by these fibers.

The diagram shows that the connection of each ear is with both sides of the brain, but that the crossed connection is more extensive than that with the same side. The diagram does not show the existence of a corresponding set of neurones whose axones pass in the direction the reverse of those shown. Degenerative changes after experimental injuries prove their existence. Hence a second diagram might be drawn showing axones of exactly complementary course. These are omitted from this diagram for the sake of clearness.

REPORT OF A CASE OF TUMOR OF THE FRONTAL
LOBE.*

BY
F. X. DERCUM, M.D.,
AND
W. W. KEEN, M.D.

Mr. J. W., age 23, single, retail business.

Family History—Father died at fifty-two of a stroke. Mother died, forty-two years of age, after an operation for fibroid tumor. Patient has a younger and an older brother, both of whom are well. Has one adult sister who is well. One brother, at two years of age, died of measles, one sister at eleven, died of rheumatism, and another sister, at nine years of age, died of typhoid fever. Patient is the third child.

Personal History—When he was a little over a year old, he had a bad fall, falling from his high-chair and striking the back of his head. The patient's sister thinks that he was unconscious for several hours. Subsequently he seemed to be quite well. Went to school and made reasonably good progress. Had typhoid fever very badly when he was about twelve years of age.

Three years ago, while reading, he suddenly told his sister that he could not speak without great effort. Subsequently he began at intervals to suffer terribly from headaches, and gave up studying law. He "could not memorize anything," and he had several attacks during which he was unable to speak, but did not lose consciousness. One Sunday, shortly after he went down-stairs, his sister heard the servants scream. She found him upon the floor unconscious, working his right arm. The attack only lasted a few "moments." His right hand afterwards was swollen. Attacks similar to this have recurred at intervals of several weeks. They are more severe at present than at first. Other parts of the body are convulsed during the attacks, but not as much as the right arm. He always falls over on the right side. The patient can tell when an attack is coming on; first has a dazed sort of feeling and cannot say what he wants to say. The dazed condition lasts about two minutes, after which he falls to the right, and the right arm is convulsed. His sister has never noticed the left arm working. At times the attacks have been prevented

*Read before the Philadelphia Neurological Society, October 22, 1901.

by taking medicine internally and also, the sister states, by having his attention drawn to other things, and by going to bed and having his right hand and arm bathed with hot water. Sister states that he frequently loses power in his right arm, so that he cannot hold anything. The arm often hangs limp and useless for days at a time. At one time it was limp and weak for a period of ten days. After a period of great weakness in the arm, he has thus far always regained power in it after a time.

The patient has had several attacks of *agraphia*. He is engaged with his brother in a retail business, and has at times been unable to write. Has at times found himself unable to write down the order of a customer. Has been obliged to call another clerk. Occasionally has been unable to write for hours; at other times for a day or two at a time. During these attacks he is entirely unable to form the letters (does not remember how to make them). The attacks of *agraphia* have occurred without *aphasia*. He has had at times a marked difficulty in expressing himself in speaking, but never a persistent *aphasic* attack.

Physical Examination—Station normal. Gait normal. Slight intention tremor. Grip, right hand 84; left hand 65. Knee-jerks normal. Tongue protruded normally in median line. No sensory losses.

Has no *aphasia* at present. No word blindness; no word deafness. However, he does not read aloud quite as well as formerly, and his handwriting has also slightly deteriorated as has also his spelling. *Astereognosis* is not present.

An examination of the eyegrounds by Dr. de Schweinitz revealed a double optic neuritis in a comparatively early stage. Pupils were normal and equal. Rotation of the eyes was normal and there was no paresis of any ocular muscle, nor was there any history of *diplopia*. The form fields also were normal.

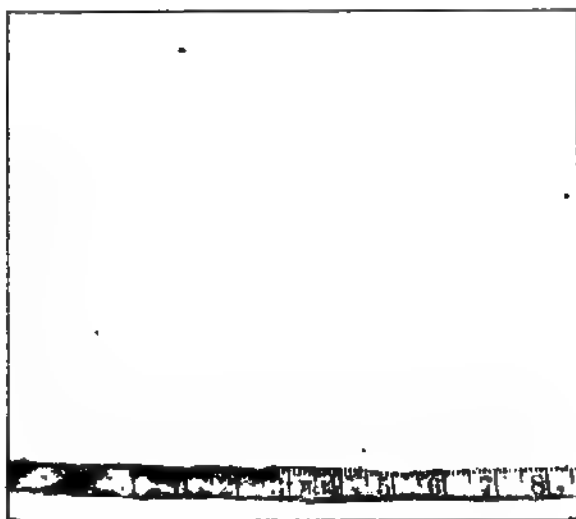
The case was of special interest from the standpoint of localization. The persistent headache and optic neuritis permitted of course of no other interpretation than that of gross intracranial disease. The focal epilepsy, that is the epileptiform attacks with the convulsive movements of the right arm and paralysis of the same member, pointed, of course, to the arm center of the left hemisphere. It is especially interesting that when the patient was tested for *astereognosis*, that *astereognosis* was absent. The absence of this symptom pointed to a lesion that did not involve the posterior-superior parietal lobule. On the other hand the attacks of *agraphia* were es-

pecially significant and pointed to the foot of the second convolution, directly in front of the arm center.

An operation was at once advised, and Dr. Keen trephined over the left arm center and subsequently enlarged the opening anteriorly. A large tumor was found springing from the dura and pressing especially upon the arm center, the second frontal convolution and also adjacent regions. The steps of the operation are described by Dr. Keen.

REMARKS BY DR. KEEN.

Operation, May 4th.—I first marked on the left side the position of the fissure of Rolando, and then made an osteoplastic flap, which was 15 cm. long, barely to the median line,



Tumor of the frontal lobe, measuring $7\frac{1}{2}$ cm., removed at operation.

and 2 cm. to the left of it, with two arms extending into the temporal region, each of them 10 cm. long. The arm center was just at about the mid-point of this large flap. Chiseling the bone disclosed the fact that it was exceedingly vascular, especially along the anterior limit. This led me to believe that probably the tumor was cortical in its origin. As soon as the flap was turned down, not only was the dura very tense and discolored, and the anterior branch of the middle meningeal very large and prominent, but at the anterior margin of the entire opening, it was evident that there was a tumor attached, involving the dura mater. A small incision disclosed

the tumor immediately under the dura, and that the dura was very adherent to it, forming part and parcel of the tumor. I enlarged the opening anteriorly nearly 3 cm. and superiorly till I reached the sagittal suture. Only by so large an opening was I able to get well beyond the limits of the tumor anteriorly. Toward the middle line the tumor reached all the way up to the falx. I traced the dura forward till I found it free from the tumor, and then was able, following the line of freedom from adhesions, to cut through the dura over a large area irregularly circular and about 5 cm. in diameter. At one point I cut through the enlarged anterior branch of the middle meningeal artery, which was seized with hemostatic forceps and then ligated. I was able then to insert my finger at the margin of the tumor and thereby to enucleate it. It was very evident from the appearance of the white substance of the brain and the adjacent cortex that at the anterior and outer edges there was no very alarming hemorrhage, but toward the middle line the hemorrhage was furious. I packed some iodoform gauze tightly in and clamped part of the dura; later in removing the clamp I found that the very large veins, which in this case were far larger than usual, were all torn, and also that the wall of the superior longitudinal sinus which had been involved in the tumor was lacerated. Meantime, by clamps, packing and hot water, I was able practically to control the hemorrhage.

Meantime the patient had had a quart of salt solution by hypodermoclysis, two enemata of coffee and whiskey, 1-10 of strychnin and 1-100 of atropin, both hypodermatically. Oxygen was administered during part of the time, in order to oxygenate the blood, which his feeble respiration threatened to imperil unduly. I had applied Horsley's wax to the bone where it bled so freely, and this controlled the very abundant hemorrhage from this source. This hemorrhage quite justified the conclusion which we reached of an underlying sarcoma; even the hemorrhage from the scalp was much greater than usual. I then closed the opening, leaving 6 to 8 hemostatic forceps *in situ* and covering them with the dressing. The patient was put to bed in a very precarious condition from shock and hemorrhage.

The tumor was given to Dr. Spiller who reports as follows: "The tumor is a spindle-cell sarcoma. It measures in its greatest diameter 7 1-2 cm. and weighs 148 grammes."

REPORT OF A CASE OF TUMOR OF THE FRONTAL LOBE,
WITH OPERATION.*

By W. W. KEEN, M.D.

Mrs. John T. F., Williamsport, Pa., *aet.* 43, was first seen in consultation with Drs. H. G. McCormick and Armstrong of Lock Haven, Pa., at midnight, April 27-28.

She was married at 35; had never been pregnant. She was said to have suffered with malaria some time after her marriage, but since then has had very fair health.

Eighteen months ago she was said, by an irregular practitioner who had her under his care, to be suffering from nervous prostration, of which headache was a prominent symptom. She was in bed for three months. In the spring of 1900 she spent some months at Atlantic City with what was stated to be uric acid and uterine trouble. All this time her headache was one of the most prominent features of her case.

She was first seen by Dr. McCormick in February, 1901, at which time her symptoms were headache, which was constant, but at the same time, with paroxysms of greatly increased pain; nausea, and from time to time vomiting. Her general health was poor; appetite fair; temperature normal; face rather flushed. Her headaches were still constant and were always located in the left temple and left brow. Occasionally also she vomited. Dr. McCormick saw her in one of these attacks and the vomiting was explosive, the contents of the stomach being ejected with great force.

Her eyes were examined some time in February and early in March, 1901, by an oculist at Dr. McCormick's request. The oculist prescribed glasses and reported there was no choked disc, the pupils were equal but sluggish in responding to light. There was also tenderness on pressure on the left eyebrow.

About this time, probably earlier in March, she began occasionally to drop a word or use a wrong word, and sometimes to wander a little and say foolish and simple things, all of which errors she herself recognized. Her cerebration also at this time became sluggish. Dr. McCormick then prescribed iodide of potassium up to grs. 60 and even 80 *t.i.d.* This she continued for about 30 days, and improved very much, so

*Read before the Philadelphia Neurological Society, October 22, 1901.

that she had no violent attack of headache, although slight continuous headache persisted for some three weeks. She only vomited three times during this period. Occasionally she was wakeful, when 6 to 8 grains of chloretone would give her a good sleep.

In March she first disclosed to Dr. McCormick that there was a tumor in her left breast about the size of an English walnut, which she said had existed for at least a year.

On April 23d marked drowsiness set in, which increased during the next day. She soon began to answer only in monosyllables and not at all unless spoken to loudly. For from 24 to 48 hours before I saw her, she had been almost coma-

Tumor of the frontal lobe, measuring 6.5 cm., removed at operation.

tose and of late entirely so. She, however, swallowed when liquids were put in her mouth and occasionally opened her eyes. With this drowsiness her temperature rose to 101° and 100.5° . When I saw her it was 99.6° ; her pulse from 124 to 130. There was no paralysis. When her drowsiness began she had involuntary urination, which has continued ever since. The bowels have never been opened involuntarily.

On April 7, another examination of her eyes was made, when it was reported that the choroid was congested, especially on the left side, the left optic nerve swollen, but the edges sharply defined; vision 0.6, but this defective vision had

existed for a considerable time before this examination. She has had no epileptic attacks. Sensation has been dull, but is present even now, for she flinches slightly when hypodermatics of strychnia are given. This flinching occurs in both legs. There has been no paralysis of any ocular muscles and no exophthalmos. All her special sensations are good.

In the urine there are no albumin and no casts (except possibly on one occasion); sp. gr. 1020 to 1022; amount normal.

Physical Examination—She was lying in bed with her eyelids nearly closed and entirely unconscious. She responded neither to speech nor to shaking or other means of attracting her attention. The pupils were widely dilated on both sides, but this was the result of atropine which had been used. She had not moved voluntarily for a day or two, but this seemed to be the result of her unconsciousness and was not strictly a paralysis. The knee-jerks on both sides were feeble; on the right side almost absent.

The one phenomenon which was extraordinarily clear was that elicited by tapping on the two sides of the head from the forehead back to a point a little behind the binauricular line. On the right side tapping produced a sound that was distinctly dull and flat like that over the liver. On the left side it was a number of notes higher in the scale and might almost be described as tympanitic, it was so different from that on the right. It seemed as though it were due to partial separation of the bones from intracranial pressure.

April 25th, 10 A.M. When she was placed on the operating table, I again percussed the skull as before, but could not now recognize any difference between the two sides. I placed the head in various positions to see if the sound could be elicited, but it could not. The difference on the two sides was so striking ten hours before that both Drs. McCormick and Armstrong, and the patient's husband and the nurse recognized it even without my calling attention to it.

Dr. McCormick's diagnosis was a cerebral growth, probably in the left frontal lobe. Even before I examined her, from the history I reached the same conclusion and after examination, especially on account of the very curious difference in percussion on the two sides, I concurred with him in the diagnosis and recommended immediate operation as a desperate chance for her life, but the only one.

Operation, April 28. I made an incision beginning in the left temple, running parallel to the left eyebrow up to within a cm. of the median line. I placed this incision as low as I dared without opening the frontal sinus. I then passed back-

ward parallel with the median line and 1 cm. to its left to a point about 2 cm. back of the binauricular line, then obliquely downward to the temple, leaving a base for an osteoplastic flap. The flap was made with the chisel and osteotome. As soon as it was reflected, I palpated the brain and could not discover much difference from one part to another on pressure. I was surprised to find the dura lacking in great tension, for I had fully expected to see very marked tension, as I deemed the tumor a large one. On the whole, the posterior-superior angle seemed to be a little harder than any other place, and I opened the dura at that point only to find the brain entirely normal. I then carried my incision along the three sides of the flap and removed the dura entirely. At the anterior superior angle almost hidden under the dura was a little discoloration. More careful inspection showed me that this was the edge of a subcortical tumor just bursting through the cortex. It was only a little darker than the rest of the brain. If the incision had been 1 or 2 cm. higher, I should certainly have missed it entirely. I reflected then the flap of normal brain tissue over the tumor and passing my finger in was able to differentiate the tumor, which might almost be described as enucleated, so distinct was it from the brain substance. I was able finally to discover the lowermost edge of the tumor, and when I reached it, it was down on the orbital plate. Sweeping my hand then forward and upward I found the tumor moderately adherent to the dura lining the vertical portion of the frontal bone, and as I swept my two fingers upward in the enucleation of the tumor, I found that the fingers were drawn upward in direct contact with the falx cerebri. The size of the tumor was 6.5 cm. As soon as it was removed a quite lively hemorrhage took place, and I immediately packed the cavity with iodoform gauze. After a few minutes this was removed, the hemorrhage was but slight, but the cavity left by the tumor was filled with another piece of gauze, the end of which was left long for drainage. The whole wound was then irrigated with warm salt solution, the dura sutured, and the osteoplastic flap replaced, the anterior superior angle of it being gnawed away to allow room for the exit of the gauze. This portion of the bone corresponding to the tumor was so tense that only the smallest bits of bone could be bitten off by the rongeur forceps. The bone was greatly sclerosed.

She died four hours after the completion of the operation, never having recovered from the shock of the operation.

Dr. Spiller reports that the tumor is a spindle-cell sarcoma.

NEW YORK NEUROLOGICAL SOCIETY.

March 4, 1902.

The President, Dr. Joseph Collins, in the chair.

A Case of Myotonia.—Dr. J. Ramsay Hunt presented a man, twenty-eight years old, who had come to the clinic with a history of having a peculiar stiffness of the hands and of the muscles of the jaws in the morning. On awakening it was found impossible to open the eyelids to their full extent for a minute or more. This myotonia was aggravated by cold or prolonged rest. There was a consolidation at the apex of one lung in this patient. Strong, stable galvanic applications produced no wave-like contractions such as are sometimes observed in myotonia. The hands were weak; the knee-jerks were difficult to elicit, except on reinforcement. The muscles were small and showed no evidence of hypertrophy. The legs were not involved.

Lymphatic Angiomata.—Dr. Joseph Fraenkel presented a man who had symmetrical tumefactions in pre-auricular space, over the upper part of the sternum, between the upper borders of the shoulders, and also in the abdominal wall. The man gave a history of chronic alcoholism. The speaker said that according to the modern conception the disorder was a localized disease of the lymphatic glands and vessels—in other words, a lymphatic angioma. Since admission to the Montefiore Hospital this patient had developed a rather acute tuberculosis. According to the literature, thyroid medication in such cases causes a diminution of the body weight, although the tumors, despite their close resemblance to lipomata, remained unchanged.

Multiple Neurofibromata.—Dr. Fraenkel presented specimens from a patient who had long been in the Montefiore Hospital. The patient was a woman who was thirty-one years old at the time of her death. Her family history was excellent, and she had been well up to eleven years ago. At that time she had given birth to a still-born child, and claimed that shortly afterward she had developed a tumor on the right side of the abdominal wall. Soon after this the left lower extremity became contractured. On admission to the hospital there were contractures of both lower and upper extremities, and they were supposed to be hysterical contractures. In the later stages she presented the picture of hysterical chorea. There were very irregularly-distributed atrophies and changes in the reaction of the muscles of the upper extremity, and in some of the muscles of the lower extremities. There was also total paraplegia. There were no trophic disturbances. At the autopsy a number of tumors, neurofibromata, were found. One of these almost totally compressed the cord. The brachial plexus was the seat of numerous neurofibromata.

Dr. Joseph Collins said that cases of multiple neurofibromata must be extremely rare, as he had just seen his first case of the kind. This patient was a smoker who came to the clinic stating that he had suddenly begun to experience pain in the right arm and shoulder, and that pain and inability were increasing. Twelve years ago he had had a somewhat similar condition, but had recovered from it, and the history indicated that there had been several other similar but slighter attacks. Examination showed that the musculo-

spiral, the circumflex and the suprascapular nerves were the ones particularly affected. They were tender on both superficial and deep pressure. Investigation showed no less than 70 tumors in different parts of the body, varying in size from one-fourth to one-half an inch. Two of these tumors could be felt in the inferior border of the axillary space where the external division of the brachial plexus was situated. It was, therefore, fair to infer that these tumors were similar to those found in the other parts of the body, and by an implication of a part of the brachial plexus had given rise to the pressure neuritis from which the patient was suffering.

Dr. Harlow Brooks said that at the January meeting of the New York Pathological Society a specimen of neurofibroma had been shown. Only the sciatic nerves were involved, and the enlargements were almost symmetrical. There was apparently a complete obliteration of the nerve fibers.

The Histrionic Element of Mental Disease.—Dr. Theodore H. Kellogg presented a paper on this subject, which, he said, was not only an interesting topic but of real diagnostic importance. Shakespeare had recognized this by introducing several insane persons into his plays. The acting was involuntary in some, and intentional in other insane persons. The maniacal patient was sometimes driven by vivid hallucinations to emotional acting. There was nothing more spectacular than a powerful man wrought up by hallucinations and delusions. The most persistent and intentional forms were seen in paranoiacs. The theatrical stage afforded nothing more striking than the lunatic leading a crowd of sane persons from their sober avocations into all sorts of vagaries of religious belief. It was the rule that whatever had been attained by laborious effort was generally abandoned in mental disease, and hence, the professional actor showed no special tendency to acting when insane. A number of cases of erotomania had come under observation which had been characterized by most persistent acting. Jealousy was one of the most powerful passions, and when it had insane intensity it led to the most tragic performances. Mental patients were prone to mimic those around them most persistently and cleverly. In most large hospitals for the insane were to be found those acting as buffoons for the edification of themselves and others. Malingering rôles were sometimes acted for weeks and months, and sometimes the patient even burlesqued the mental disease. They sometimes dissembled their real symptoms and denied the existence of delusions in order to secure discharge from asylums. It was well understood that prolonged feigning might lead to insanity, but it was not so generally known that unless the histrionic element were repressed it would tend to interfere with the cure of the mental disease. The recognition of the histrionic element as an integral part of mental disease shed light on some obscure phases of mental pathology, and had practical bearings in the prognosis and treatment of mental maladies.

Dr. Lyon said that the author of this paper had enjoyed unusual opportunities for observing insanity in all its forms, and the instances cited were undoubtedly the exceptions rather than the rule. There were not many who act a consistent rôle for any length of time. He had known some of these patients who were trying to act the rôle of a certain personage halt for a moment when confronted with the statement that this was not the true impersonation. He agreed with the reader of the paper that it was well to discourage, without actively combating, these delusions.

Dr. Deffendorf said that the paper was exceedingly interesting from a descriptive standpoint. He could not agree with the statement that the histrionic element was of great prognostic and diagnostic value. Such acting was said to be the expression of morbid impulses, and that it occurred in connection with grandiose ideas in paranoia, yet in the one class the prognosis was good, and in the other it was very unfavorable.

Dr. Ralph W. Parsons described a number of striking and amusing cases illustrating the histrionic element. He said that in these cases the imagination was the predominant element, and that there was often a reversion to the mental state found in children or in primitive races.

Dr. Noble, of Middletown, Conn., said that the patients he had met with who had displayed the histrionic element, had rarely been consistent; they would not carry out the entire character impersonated as an actor on the stage would do. Whether this were because of deficient knowledge of the character impersonated or because of a deficiency in histrionic ability, he could not say. He had always looked upon this element as unfavorable, probably because it was so largely seen in paranoiacs.

Conditions for Psychiatric Research.—Dr. Adolf Meyer read this paper. He spoke of the founding of the New York Pathological Institute of New York State, and of the causes which had led to the failure of this work. He said that he had hesitated long before accepting the present unenviable position and the task of reorganizing this institute, and making it more generally useful. He had been told that the hospitals for the insane would not receive what they most needed if the institute began its work with research. The scientific spirit in the hospitals should be stimulated and fostered in every way possible, and hence clinical and pathological work should be done as far as possible in these hospitals under the supervision of the institute. The central institute should offer to the hospitals advanced instruction in clinical psychiatry. The central institute should not, however, abandon original research. The safest starting point was undoubtedly actual experience. The pathologist of the hospital for the insane had found himself hedged in by narrow routine, and the hospital staff so engrossed with routine work as to have no time or inclination for original scientific investigation. The speaker then went on to point out many of the inaccuracies of symptomatology and the shortcomings of histology as applied to psychiatry. In his opinion, the staffs of the hospitals for the insane were entirely too small to do their work well. Psychiatry knew little as yet of diseases, as that term was used in connection with other parts of the body—in other words, it knew little of pathological entities. In no other field of medicine were absolutely accurate records so useful as in psychiatry, yet where were such records to be found? The effort of the present day should be to improve the records and do away with the prevalent impressionist method. Dr. Dent, of the Manhattan Hospital, had agreed to give the necessary clinical material for a start, and a chemical laboratory and a histological laboratory for study in clinical psychiatry would be established, and, in time, a psychological department would be added. All those in charge must be physicians especially interested in psychiatry. The assistant physicians in all the hospitals should be encouraged to do good work according to the recognized modern scientific methods. The new movement must be a natural outgrowth of the present conditions.

Dr. Lyon thought the workers in the hospitals for the insane would very generally welcome such help as had been offered in outline in this paper. He had long felt that clinical and laboratory work should be practically united.

Dr. Smith Ely Jelliffe congratulated the reader of the paper and pledged his hearty coopération. He said that he knew the stress of work laid upon the hospital interne and sympathized with him, and for this reason he thought the suggestions contained in this paper were most judicious.

PHILADELPHIA NEUROLOGICAL SOCIETY.

February 25, 1902.

The President, Dr. J. K. Mitchell, in the chair.

A Memoir of the late Dr. J. T. Eskridge was read by Dr. C. K. Mills.

Conditions of Psychiatric Research.—In the annual address delivered before the Neurological Society of Philadelphia, Dr. Adolf Meyer outlined what he would consider safe ground for psychiatric research, and especially what conditions demand consideration in any such plan as the organization of a central institute of psychiatric study in the State Hospital system of the State of New York. In the face of several high-sounding and would-be constructive sketches which have given the public a rather too imaginative view of the duties and possibilities of psychiatry, and equally aware of the nihilism of a large number of medical men concerning the prospects of study in this complicated field, he chose to give a simple statement of the existing conditions and opportunities of some of the efforts for advance which have been made, and of the reasons for a certain degree of lack of satisfaction with the outcome of some of them. On these premises he built a brief sketch of the general policy which would seem most promising and least exposed to calamities from weakness of the roots or from premature starts before the season of frosts had passed by.

Medical schools have medical and surgical clinics specially organized for the purposes of teaching and research; but they only are guests in hospitals for the insane, and offer no chances for the study of the fundamental requisite of special work in psychiatry. In the hospitals the economic problems are so enormous that the head and even the assistants are not in a convenient position to make up for what the medical schools are forced to neglect. The opportunities for better work exist and are used in many places, but often under discouraging conditions. There are frequent changes in the entire policy of the hospitals, too often dominated by ideals of economy on the part of the State rather than by those of efficiency; owing to the small number of physicians, an unfavorable ratio between the administrative and the truly medical issues in the work tends to crowd out the student, and these drawbacks are accentuated by some fundamental defects in the efforts to correct the appearance of lack of scientific interest. The point of attack for efficient changes lies in these last-named elementary matters, and an improvement of the chances and the numbers of the staff, and the policy of the hospitals and the State can be expected only from a natural evolution from the foundation.

Scientific medicine or pathology has been introduced in many hospitals, but usually, copying general hospitals, in the shape of a microscopist, and the hopes seem to be put chiefly on laboratories and on methods used in modern clinical medicine and modern psychology.

In principle, this is certainly correct and legitimate. But as conditions are in psychiatry, many of the new methods find no adequate home in the present status of clinical knowledge of psychiatry, and much of the work appears disconnected, devoid of the aims which

so plainly exist in pathology of many of the somatic diseases, and we are forced to recognize that to apply detail methods before the foundations are laid is an attempt at making a shortcut and one sure to fail sooner or later.

The advance of general pathology in the other fields of medicine was built on a strong foundation laid by the great clinicians of the beginning of the last century. Psychiatry, especially in this country, has had to cope with large practical problems and the foundations of a careful knowledge of the facts about insanity were correspondingly meagerly treated. We lack, today, sets of records systematically taken, which would furnish us such material for the finer methods of psychiatry, as bacteriology and other branches of pathology, found in the clinical knowledge of consumption and of diphtheria, and such as are available for the open problems in our knowledge of measles, scarlet fever, small-pox, etc.

The temporary lack of directness of records must not deter us from efforts to improve them, and from working for that which other branches of medicine could do a hundred years ago. It is a grave error to think that statistics of large numbers can help us over the lack of real certainty of what is seen and has been done in individual cases as long as the uncertainty and haziness is not merely casual, but the rule. Out of the needs of explanation in individual cases and in groups of cases, problems of detail will arise, and only with a contact with a well-worked-up clinical material can we hope to gain the necessary appreciation of proportions and relations in plans of work and the valuation of the importance of results.

Neither anatomy nor pathological anatomy of insanity, nor old and new psychology by themselves, nor a collaboration of all the biological sciences can make up for the lack of a safe foundation, and the sooner we recognize that not anatomy as such, but every mode of establishing chains of facts which allow of experimental control, or approach experimental certainty, is veritable pathology, the sooner we shall get rid of that uneasiness which undoubtedly exists in many places and leads to the nihilistic assertion that "there is no pathology of insanity as yet."

The normal development of psychiatry therefore demands not an extraordinary revolution, but before all a well-planned organization and improvement of that which exists as practical work. A knowledge of its opportunities and needs, united with a knowledge of the methods available in scientific medicine and the special sciences of biology, alone is able to bring about that helpful coöperation which the hospitals have a right, and the duty, to look for.

Dr. Meyer gave a sketch of the organization carried out in Worcester Insane Hospital, and described in its annual reports, and went on to sketch briefly the plan of a central institute which in order to be helpful to the State hospitals must do work in harmony with that of the State hospitals, get its foundations on clinical work conscientiously carried out, and in a development of interest in possibilities of improvement among the medical staffs of the State hospital.

The needs of the assistant physicians lie in directions which do not get much help in medical schools or books, and it is not only commendable, but an absolute duty on the part of the State, to provide chances for training and research, because the State and a few wealthy private concerns monopolize the institutions in which psychiatry can be studied at all, and in which thorough knowledge of the methods and problems can be acquired and taught. The State forces its physicians on the patients, who are deprived of their choice

by law and disease, and the State must therefore help itself and its institutions to be able to carry the burden of this serious responsibility.

It is to be regretted that so many programs of psychiatric research consider it below their dignity to insist on the correction of some of the simple defects in the work, and dwell on Utopias for which foundations are absolutely not prepared yet. Of these Utopias little was said in the address, nor were any promises made which cannot be safely expected to be capable of fulfilment under satisfactory conditions.

The new institute will provisionally be located on Ward's Island. A small clinical service will be arranged and conducted with special reference to teaching and research, so that assistant physicians from various hospitals can get training in all the matters which they meet in their own work. Practical demonstrations are furnished concerning the issues in examinations and methods of obtaining and recording general clinical, chemical and psychological data, and the requirements for appropriate utilization of the autopsies. Satisfactory and helpful teaching can only be given on material collected by the teacher, and accessible of control to the one who is taught, and an institute furnishing this will form a natural basis for special research as well, and meet the demands of the hospitals, so that a more natural relation and harmonious co-operation in the work between the institute and the hospitals can be affected. It is to be hoped that these definite and unassuming plans will inspire the necessary confidence of the governing bodies until the work itself can demonstrate its justification.

Dr. Charles K. Mills believed that the first and greatest step towards a knowledge of psychiatry was accurate and thorough methods of study of psychiatry clinically. Every one must be struck with the feebleness of our clinical methods of investigating mental disease as compared with our methods of investigating other diseases, especially with those employed in general neurology.

He believed that little would be accomplished until there was organic union more or less complete between the clinician and the pathologist. One reason why so much work has been done with so little result is that the material used for pathological research is so often used by those unfamiliar with the clinical work done previously.

Dr. Francis X. Dercum said that it had always seemed absurd to him that in hospitals, and especially in insane hospitals, the number of physicians should be so small as compared with the amount of material. With his routine duties the physician has little time for scientific work. A single case may present problems that would require days, months or even years of observation. He was glad to see so excellent a plan outlined, and he had no doubt that the application of the methods referred to, especially those of chemistry, would yield some results as regards the action of various toxins on the nerve tissues and cells. Psychiatry is in the transitional stage. It is the youngest of the medical sciences, and the last to receive scientific treatment, but it is a field full of promise.

Dr. Charles W. Burr said that one of the greatest difficulties in the study of the mental symptoms of disease was that we do not know anything about the healthy mind. It is impossible to tell why a man has hallucinations of smell, it is impossible to have any conception of the mechanism of hallucinations of smell when we have no idea how the normal man smells when not sick. The same thing

is true of every intellectual process. There is not a single intellectual process which we thoroughly understand. All that we know is that the brain does think. How it thinks we do not know. So long as that continues mental disease will be a bogmire without form and void. Almost all the work that has been done in so-called psychology has not been work in psychology at all. It has been work in the physiology of the brain, not in the intellectual processes of the brain. The only possible thing to do is to go on examining cases. He thought that unless we discovered higher powers of the microscope, or staining processes of which we now know nothing, it would be a long time before we learned more of the morbid anatomy of insanity. The chemical line is the line of the future, and it is in this direction that the greatest discoveries will be made.

Dr. Edward N. Brush stated that his clinical assistants at the Sheppard and Enoch Pratt Hospital were now engaged with the general physicians in the Johns Hopkins Hospital in studying the mental symptoms of general diseases such as typhoid fever. There are many symptoms which should have been observed but which have been utterly neglected.

He had been exceedingly interested in Dr. Meyer's paper, and had watched the development of the laboratory in New York State with peculiar interest, because he had himself served for some years in one of the New York hospitals, that of Utica, which was the first hospital to establish a laboratory. In that laboratory the mistake was made that there was very little connection between the observations in the laboratory and those in the wards. He believed that the work as outlined by Dr. Meyer would accomplish good results.

Dr. S. Paton referred to the work now being done by the physicians of the Sheppard and Enoch Pratt Hospital in the wards of the Johns Hopkins Hospital. One member of the staff is studying the mental symptoms in cases of Bright's disease, typhoid fever, pneumonia, and so on. A good general autopsy is made by one of Dr. Welch's assistants, and then the physicians take charge of the brain and the rest of the nervous system, which is worked up in the laboratory. Conferences of the whole staff are held and new cases are discussed. Daily rounds are made by the whole staff.

He referred especially to the liberal attitude of the trustees in the management of the hospital.

Periscope.

Rivista di Patologia Nervosa e Mentale.

(1902. Vol. vii, fasc. 3. March.)

1. Pathology of the Cells of the Sensory Ganglia. E. LUGARO.
2. Contribution to the Study of Parkinson's Disease. P. GONZALES and P. PINI.

1. A Continued Article.

2. *Parkinson's Disease*.—One of the numerous theories as to the pathogenesis of Parkinson's disease has arisen in the widely-accepted belief that the condition does not belong to the neuroses; and there is much in favor of the hypothesis that the affection is due to some anatomical lesion of the nervous system, probably the brain. Gonzales and Pini report a case of epilepsy dating from early childhood in which convulsions gradually diminished in frequency and finally disappeared about the forty-fourth year; only to be succeeded a few years later by the gradual development of paralysis agitans. The authors advance some suggestive arguments pointing to the possible origin of the last-named condition in those influences which, acting upon the motor zone, had given rise to the epileptic seizures and so modified that area as to render it a favorable site for the development of Parkinson's disease.

R. L. FIELDING (New York).

Archives de Neurologie.

(1902. Vol. xiii, No. 76, April.)

1. Theory of Obsession. F. L. ARNAUD.

1. *Theory of Obsession*.—The author calls attention to the occurrence of obsession in the normal, as illustrated by the obstinate intrusion upon the mind of a phrase, a strain of music, etc., the banishment of which requires strong effort of the will. Morbid obsession is discussed from the intellectual and emotional standpoint, the author concluding that both intellect and emotion play an important rôle; but back of both, and antedating obsession, is the condition of abulia, the former being considered above all a disease of the will.

R. L. FIELDING (New York).

Monatsschrift für Psychiatrie and Neurologie.

(1902. Vol. xi, No. 2, February.)

1. Experimental Studies on the Effect of Mental Work on the Urinary Excretions. MAINZER.
2. The Condition of the Spinal Cord in Pulmonary Tuberculosis of the Insane. RANSOHOFF.
3. The Microscopical Findings in the Case "Gorstelle." LIEPMAN and STORCH.
4. On Exhaustion Psychoses. RAECKE.

1. *Experimental Studies on the Effect of Mental Work on the Urinary Excretions*.—In a series of experiments upon himself the author found that the excretion of organic phosphorus was diminished to a mere trace after severe mental exercise. A comparison of the work with the rest period showed the nitrogen excretion in the former was 14 per cent. of the entire excretion as compared to 6 per cent. for the

rest period. The nitrogen curve was an excellent index of the exhaustion and repair processes. Observation on several neurasthenics and similar depressive states in the mild psychoses showed that sleep was of a light character during which the nitrogenous products were slowly and incompletely eliminated. Sleep was lightest in the late hours and waking in such cases was a prolonged process.

2. *The Condition of the Spinal Cord in Pulmonary Tuberculosis of the Insane.*—The microscopical examination of the spinal cord in nine cases of tuberculosis gave Ranshoff the following conclusions: (1) The white substance of the spinal cord, especially in the long tracts, frequently suffers injury in pulmonary tuberculosis. In the beginning such changes are only manifest by application of the Marchi method of staining, later in the entire decay of medullated fibers and replacement by glia overgrowth. (2) Those cases are especially predisposed which run a rapid course, notably those of so-called mixed infection. (3) The degenerative process is especially marked in the posterior columns of the cervical and the pyramidal tracts in the upper dorsal region. The extramedullary roots are never involved. (4) Edema of the spinal cord is not a rare condition in phthisical cases, but is independent of the former degenerative changes.

3. *The Microscopical Findings in the Case "Gorstelle."*—Liepman and Storch conducted the microscopical examination on the case of apoplexy shown fifteen months ago by Wernicke at a medical society at Breslau, as a case of "pure subcortical aphasia." The patient was a man 69 years old, who presented his unique aphasic symptoms after a stroke of apoplexy in 1898. A second attack which occurred 15 months later caused death. The autopsy, performed 40 hours after death presented a large blood cyst extending over the entire left hemisphere; the corona radiata of this side was entirely destroyed by the hemorrhage. A secondary degeneration of the tapetum was found in the right temporo-sphenoidal lobes which was the result of the original lesion in the corona radiata and the tapetal region of the left side was found entirely destroyed in the secondary and fatal hemorrhage. Notwithstanding the evidence is not conclusive, the authors conclude that the case proves the lesion for word deafness or "subcortical sensory aphasia of Lichtheim," at least in this case, a unilateral subcortical destructive one, affecting the integrity of the tapetum.

4. *On Exhaustion Psychoses.*—Raecke presents in conclusion carefully detailed clinical histories of ten cases of mental diseases induced in individuals by bodily and mental exhaustion in which the hereditary element was at the minimum. The mental symptoms were of the delirious type; the patients presented for the most part non-systematized delusions of persecutions and also hallucinations of the same general character. The author believes that such cases of mental disturbance may not be isolated from the severe disorders of the insanities proper; and while he thinks such a type of mental disease deserves a more definite name than "exhaustion psychosis," he fails to suggest a better one.

5. To be abstracted at conclusion of article in next month's number.

L. PIERCE CLARK, (New York).

Neurologisches Centralblatt.

(1902. March 1. No. 5.)

1. Pathological Anatomy of Tetany of Gastric Origin. N. G. J. ROSSOLIMO.
2. A New Tetanic-like Affection of Chronic Lead Poisoning. HANS HAENEL.
3. Staining Nervous Tissues with Magenta Red. P. ZOSIA.

4. Asthenic Paralysis and Autopsy Record. (E. FLATAU) GOLD-FLAM.

1. *Pathological Anatomy of Tetany*.—An autopsy report on a case of tetany, associated with narrowing of the pylorus, which was due to an overgrowth of connective tissue, probably the result of a gumma in the stage of final sclerosis. The voluntary muscle tissue under the microscope, showed an increase in the sarcolemma nuclei, arranged in places in chain-like formation. Degeneration of the anterior and posterior roots, with disappearance of the myelin sheaths, swelling and tortuosity of the axis cylinders, etc., was found. By the Marchi method small dots of degeneration were found irregularly scattered through the spinal cord. Diffuse chromatolysis with displacement of the nucleus was found in some of the spinal cord cells. These cell changes are the result of an intoxication and are not to be considered as specific for tetany.

2. *A New Symptom of Chronic Lead Poisoning*.—A case of chronic lead intoxication in an author, with symptoms resembling tetany. The patient had had lead colic, with the blue line on the gums, and developed a chronic progressive disease of the muscles manifested by tetanic contraction of varying muscle groups, excited by slight irritation, quick movements, etc., and at times developing spontaneously. The tetanic spasm was decidedly painful. Chvostek's symptom was present, but the spasm did not at any time affect the facial muscles. Sensation was normal. The diagnosis was doubtful, but was either a tetany or a myoclonia, or a symptom complex between these two conditions.

3. *Magenta Red as a Stain for Nervous Tissues*.—Zosia calls attention to the value of a 1 per cent. solution of magenta red as a counter-stain for "Pal" preparations, etc.

4. To be continued.

Neurologisches Centralblatt.

(1902. March 16, No. 6.)

1. A Case of Acute Disseminated Myelitis, or Encephalo-myelitis following CO Poisoning. A. PANSKI.

2. A Further Contribution to Asthenic Paralysis. S. GOLDFLAM AND E. FLATAU.

1. *Acute Disseminated Myelitis*.—A case is reported presenting the following symptoms: a spastic, not atrophic, paralysis of the lower extremities; incontinence of urine and feces; vasomotor and trophic disturbances such as a pemphigus eruption, bed sores, etc., prolonged somnolence lasting over days; confusion; slowed, indistinct speech; amnesia, etc. He therefore makes the diagnosis of acute encephalo-myelitis. The case differs from those already on record, in the presence of the cerebral symptoms. Very few of the above symptoms could be detected after two months. A very complete bibliography is added to this article. McCARTHY (Philadelphia).

2. To be continued.

Journal de Neurologie

(1902. January 5, 20; February 5. Nos. 1, 2 and 3.)

1. Contribution to Medullary Localization. PARHON AND GOLDSTEIN

2. Conjugal Cord Affections. GLORIEUX.

3. The Fascia Lata Reflex. J. CROCC.

4. The Post-anesthetic Paralysis. D. DE BUCK.

5. A Case of Vertebral Cancer. RAYMOND.

1. *A Contribution to Medullary Localisation* (Continued from No. 25, December 20, 1901).—Drs. Parhon and Goldstein discuss at length

their theories and results of some of the recent investigations. As the nature of the subject will not bear condensation, the reader is referred to the original.

2. *Two Cases of Conjugal Cord Affections.*—The author refers to the works of German authors, especially Mendel, who report cases of general paralysis of the insane, occurring in man and wife. In the majority of these cases a history of previous syphilis was established in one or both. Strümpell in 1888 recorded a case of conjugal tabes both giving evidences of lues. Talon in 1898 collected 16 cases of locomotor ataxia in married couples. Dr. Glorieux's first pair presented unmistakable symptoms of locomotor ataxia. In neither was the slightest history or indication of syphilis forthcoming. The wife had given birth to 15 children, 10 dying in early life, one of convulsions, the others of fevers.

Of the second pair the husband had tabes of the amaurotic type, and the wife a spastic paresis of the right leg, with slight vesical symptoms; no sensory disturbances; Babinski phenomenon on both sides. The wife's paralysis had developed gradually, following an operation for removal of a uterine tumor. She had had one miscarriage and three still-born children previous to this. Here the writer likewise excluded syphilis, admitting, however, that the large mortality of the offspring in the first case, and the still-births in the second, would be accepted by many. Clinicians, he says, are too prone to accept vague and uncertain evidence of this character as bearing on an antecedent syphilis.

3. *The Fascia Lata Reflex.*—Reference is made to Brissaud's original communication on this subject in 1895. Brissaud obtained by gentle plantar stimulation an isolated contraction of the *tensor vaginae femoris*; in some cases a contraction of the adductors, or the adductors and extensors of the thigh occurred as well. In a few cases contraction of the adductors of the opposite thigh was the only response.

As the plantar innervation corresponds to the second and third sacral segments, and the superior gluteal nerve which supplies the tensor of the fascia lata originates in the third and fourth lumbar segments, Brissaud assumed that the reflex arc had an extensive intramedullary course.

On the other hand Ganault, in his thesis published in 1898, believes that the internal saphenous nerve, which inosculates with the plantar nerves, carries the impulse to the spinal cord, and as this nerve is represented in the second, third and fourth lumbar segments, the intramedullary course of the arc would be materially shortened. Dr. Crocq follows with three observations, in which the fascia lata reflex was present under peculiar circumstances. (I) A man with paraplegia probably due to an alcoholic neuritis; with loss of the tendon and skin reflexes; no sensory disturbances. The sole response to plantar excitation was an isolated contraction of the *tensor vaginae femoris*. (II) A man aged 55, who since his fifth year had carried the remains of a right-sided hemiplegia: exaggeration of the tendon reflexes, ankle-clonus and Babinski, presented symptoms of cord compression in the lumbar region: paraplegia, loss of pain and temperature sense below the umbilicus, maintenance of the sphincters and decubitus. The patellar and Achilles jerks were of normal range on the right side, very feeble on the left, cremaster and abdominal reflexes abolished, Babinski present on both sides as well as a very energetic contraction of the tensor of the fascia lata. (III) A mason who, from an injury to the cord at the age of 22, was left with a permanent bilateral foot drop, at the age of 52 was seized with pains and weakness in the lower extremities; sensation undisturbed; knee-jerks abolished, Achilles jerks exaggerated, plantar and

cremasteric reflexes feeble. The reflex of the fascia lata exaggerated on both sides. His symptoms, which were due to alcohol, improved under treatment, but then persisted: loss of knee-jerks, exaggeration of the Achilles jerks lends support to the theory of Brissaud that the sciatic and not the internal saphenous conveys the centripetal impulses.

4. *The Post-anesthetic Paralysis*.—Dr. D. de Buck quotes some of the conclusions reached by Bastit and de Moret in their extensive monographs dealing with this subject. That the amount of chloroform administered bears no relation to the production of the paralysis. Hysteria and cachexia are predisposing factors. Cardiac and arterio-sclerotic affections play a rôle (embolism and thrombosis). These paralyzes are especially frequent in women, not infrequently following operations on the genital organs. A reflex paralysis from the operative trauma offers the only explanation in some cases. Various types of paralyzes occur, as monoplegia, hemiplegia, disseminated and cranial. The symptoms are usually not severe and disappear quickly, suggesting a remediable cell or fiber change (*lésions necrobiotiques*). Dr. de Buck follows with three personal observations.

Case I.—A woman aged 56 years underwent curettage for an inoperable carcinoma of the uterus. Chloroform narcosis of fifteen minutes' duration. Regained consciousness with a paralysis of the right arm with tingling. No objective sensory disturbances, no electrical changes; recovery in two months.

Case II.—A woman aged 40 was operated for uterine fibroids. An abdominal hysterectomy was performed, in the Trendelenburg position, chloroform anesthesia lasting an hour. After the effects of the chloroform had worn off, there remained a paresis of the left arm with tingling, exaggerated reflexes; no objective sensory disturbances; no electrical changes.

Case III.—A woman aged 44 was 15 minutes under chloroform for a curettement. Was very anemic. The next day developed a right-sided hemiplegia with motor aphasia; ankle-clonus; Babinski's phenomenon. Pains and hyperesthesia on the right side. Total recovery in three weeks.

The author excludes all possibility of trauma or pressure in the above cases.

5. *A Case of Vertebral Cancer*.—Prof. Raymond reports a case of a woman aged thirty-seven years, shortly after an extirpation of the left breast for carcinoma, was seized with dull pains in the back. These pains soon became sharp and lightning-like, agonizing in their intensity, and having an intercostal irradiation. At the same time there developed painful cramps in the lower extremities, causing forced flexion of the legs. Sitting or stooping aggravated back symptoms. Later the lower extremities became numb and progressively weaker, the lancinating pains abating in their intensity. A few months later was admitted to Prof. Raymond's service in the Salpêtrière in the following condition:—complete paralysis of the lower extremities, the abdominal, intercostal and sacro-lumbar muscles. The breathing was diaphragmatic. Knee-jerks present; Achilles-jerks absent, as were also the plantar reflexes. A dissociated anesthesia extending to the umbilicus. Tactile sensibility preserved but obtunded. Deep sensibility undisturbed. There was dysuria, obstinate constipation and tachycardia. Lateral movements of the head caused severe pain; there were frequent sub-occipital headaches. Prof. Raymond refers the symptoms to a carcinoma metastasis, implicating the upper portion of the dorsal segment of the cord, and involving chiefly its antero-lateral portion, including the gray matter. He offers the following division.

I. Latent carcinoma of the vertebra (involving the body).
 II. Carcinoma of the vertebra causing compression of the cord; posterior root symptoms absent, or of trifling significance.

III. Carcinoma of the vertebra causing persistent agonizing pains. These cases are often produced by the malignant growth, forcing its way through the intervertebral foramina from the thoracic or abdominal cavities. The spinal deformity in carcinoma is usually a curvature *grande courbure* in contradistinction to the gibbus of Pott's disease.

The author, in conclusion, refers to the views, old and new, which have been held in regard to the cord changes produced by compression. The ischemic softening of Tripier. The transverse myelitis of Charcot, with secondary degenerations. The frank inflammation of Leyden. The stasis of lymph and cerebrospinal fluid of Schtscherbach and Rosenbach. The local edema which may be mechanical or inflammatory or both, producing a softening terminating in sclerosis as suggested by Schumanns, who admits that myelitis may develop by a direct extension from the neoplasm. In these cases of malignant disease of the spine with severe pains, Prof. Raymond believes a palliative operation has ample justification, notwithstanding the absolutely fatal prognosis.

J. R. HUNT (New York).

Revue Neurologique.

(1902. Vol. 10, No. 3, February 15.)

1. Two Histological Aspects of Tuberculous Ventricular Ependymitis. D. ANGLADE.
2. Destruction of the Sphenoidal Pole and of the Hippocampal Region in Two Hemispheres. BOUCHARD.
3. A Case of Hematic Cyst in the Brain. A. VIGOROUS AND M. LAIGNEL-LAVASTINE.

1. *Tuberculous Ventricular Ependymitis.*—The author says that few studies are more instructive than those of the nervous systems of patients subject to tuberculosis in any of its forms. To look at a brain tainted with meningitis or tuberculosis is interesting; but much more profit comes from study of the whole nervous system of tuberculous patients who, during life, have shown no marked nervous or cerebral symptoms. It is known concerning tuberculosis of nerve centers that it is there manifested in the form of tubercles or of tuberculous liquid; the bacillus reaches the centers through the meningeal vessels, and in the lumen around these vessels tuberculous granulations are developed which may affect vascular obliteration and consequent softening of surrounding regions. Aside from the direct lesions caused by the bacillus are those in which it takes part only indirectly, as scleroses of the medulla and brain. It has been shown that the tubercle causes, in the medulla, systematic fascicular scleroses, hyperplasias followed by necrosis and formation of cavities analogous to those of syringomyelia; and the lesions of the syringomyelia are associated with those of tuberculous meningitis. Tuberculous poisons in the brain stimulate analogous neurological reactions, and to some of these attention is called by the author.

2. *Destruction of the Sphenoidal Pole and the Hippocampal Regions.*—At the autopsy of a patient who, during life, had shown mental trouble and who succumbed to meningeal hemorrhage, destruction of the temporal pole and the hippocampal region in both hemispheres was assigned as the cause. The alterations seemed to evidence loss of substance without traces of irritation, and may throw some light on questions of the relative functions of the hippocampal region. The patient was a soldier when he began to show mental trouble, especially weak-

ness of memory. He was never delirious, there was never disorder in ideas or acts or any hallucinations; he was always affable, polite and generous; had preserved a certain degree of moral conscience and honesty and liked to give advice. Loss of memory predominated; he instantly forgot what was said, remembered no names, and could not even find his own bed at night, or his place at table, although he always went regularly. Of his past life he remembered nothing except that he had been a soldier, which his bearing and speech confirmed. He spoke little and rarely, only when addressed, and could not reason. The sense of taste was intact and he showed preferences for certain things to eat. He could smell keenly, and sight and hearing were good. There was nothing abnormal in general sensibility. He was found one morning immovable and almost unconscious; the limbs were in resolution and reflexes were produced with difficulty. Pulse, 72, and respiration normal. He died the following day.

Autopsy.—Externally the skull presented no malformation. Upon incision of the dura mater on the right side, an effusion of dark, coagulated blood was discovered, which must have extended 8-9 cm. front and back, 6 cm. up and down, and been 1 cm. thick. The blood removed, no trace of false membranes was found or any ruptured vessels. The hemisphere was anemic and depressed in proportion to the quantity of blood lost. Raising the brain to remove it from the skull, a protuberance, which had every appearance of a cyst, was seen near the antero-inferior extremity of the left sphenoidal lobe. The tumor had a very thin, delicate wall and contained a liquid like pure water; but after the removal of the brain it was seen not to be a cyst, but the liquid of the third ventricle, the sphenoidal cornu of which was much dilated. The nerve substance had completely disappeared in this region. The top of the sphenoidal lobe, situated in front of the transverse line following the trunk at the bottom of the fissure of Sylvius, at the beginning, was destroyed, as was also the cornu Ammonis and the V temporal convolution of the hippocampus, the lesion of which extended as far as the isthmus where it involved a part of the gyrus fornicatus and the lingual lobule. The IV temporal convolution had disappeared to a less degree, while the lesion extended back to the fusiform lobe. A thin and transparent membrane, formed by the arachnoid, intimately united to the pia mater and the ependyma, constituted the wall of the ventricle in this region. Outside and in front, on this membrane, the nerve substance was cut off in short pieces.

On superficial examination the homologous parts on the opposite side seemed to have preserved their normal structure, but closer examination showed that the lesions were similar, only less advanced. The convolutions which formed the top of the sphenoidal lobe and of the fourth and fifth temporal convolutions remained only in their superficial parts; the wall of the ventricle, very much dilated, was formed of a delicate layer of gray matter corresponding to the most elevated parts of each convolution, and by a thin membrane near the fissures. The variable thickness of the wall thus atrophied and disorganized was hardly recognizable; the lateral ventricles preserved their normal dimensions in anterior and posterior prolongations. The internal side of the dilated ventricular region was united, smooth and woven with the ependyma; and especially on the left, the protuberance formed by the caudate nucleus was followed from the anterior end to the blunt point on the inferior, in the region of the fissure Sylvius.

The alterations in the temporal lobes were very interesting, and may be considered from two points of view, the anatomo-pathologic, which may lead to the determination of the nature and cause; and from the

point of view of the symptoms to which they give rise. The question is not of a more or less deeply penetrating cavity, but of an extensive loss of substance comprising the ventricular mass and leaving only the meninges of the superficial convolutions, as instanced in the right sphenoidal lobe.

Although, according to Kundrat and Audry, the porencephalous cavity is usually single, it is sometimes double, oftenest symmetrically placed on the lateral hemispheres; and in proportion of 38 to 26 it occurs on the left, as in the present case. Porencephalitis usually develops in intrauterine life, rarely in early years. The patient under consideration was an exception, as the lesions were developed later, according to his history; the bony protuberance in the left sphenoidal fossa, where the alteration was most distinct, was also proof that the accident was of long standing but not of infancy, which would have caused injury of another sort. He had probably lived twenty-six years after the accident, and had grown better instead of worse, as is the case in porencephalitis. The fact that general sensibility and muscular control, as well as the senses of taste and smell, were normal in the patient, proves that the centers of their various manifestations must be elsewhere than in the hippocampal region, in the Rolandic, for instance, contrary to the suppositions of most physiologists.

3. *Cerebellar Hemiasynergie with Autopsy.*—*Hematic cyst in the right cerebellar hemisphere.*—The cyst was the remains of a former hemorrhage, found at autopsy fastened in the white substance of the right hemisphere, to which was added, as the immediate cause of death, a profuse hemorrhage retained in the cavity. The anatomico-clinical methods employed justify the following deductions. (1) The value of hemiasynergie for diagnosis of protuberant cerebellar lesions of the same side was first shown by Babinski. By this sign, in the actual case, the cause of the cerebellar syndrome was localized in the right side, and this topographical diagnosis was confirmed by the autopsy. Microscopical examination alone will ultimately determine whether the recent protuberant lesion does not hide an older lesion. Moreover, even in this very case, the anatomico-clinical observation, even if it does not show the cerebellar nature of the hemiasynergie, always shows its protuberant nature. (2) The existence of paradoxical reflexes before pain began and seemingly allied to the recent hemorrhage. This is a fact which must wait for confirmation, and the clinical value of which entirely escapes us.

JELLIFFE.

Revue Neurologique.

(1902. No. 4. February 28.)

1. Flaccid Paraplegia in a Case of Cervical Pachymeningitis. E. BRISSAUD AND MAURICE BRÉCY.
2. Remarks on Permanent Spasmodic Paraplegia through Medullary Tumor. RAYMOND AND R. CESTAN.

1. *Flaccid Paraplegia.*—There is brought forward a new fact concerning paraplegia, observed in the course of a tuberculous cervical pachymeningitis. There has been formerly presented a case of spasmodic paraplegia produced by compression of the dorsal medulla, equivalent to a section. The infallibility attributed to the law of Bastian by most neurologists is not recognized for the following reasons: "We do not dispute that complete and sudden section of the medulla, which produces certain traumatisms, induces paraplegia, always flaccid, with no reflexes and total loss of sensibility; but until more fully instructed, we consider as proved the fact that a slow pressure acting as a ligature with

an indefinitely prolonged structure, transforming the tissue of the medulla into a veritable cicatrix, may give place to spasmodic paraplegia."

The present case seems to contradict this. A tuberculous patient who showed signs of cervical pachymeningitis for the first time in April, became paraplegic in May. The paraplegia was a flaccid one and he died in September, five months thus passing between symptoms and death. Often apparently merely descending lesions of the lateral cords, either by cutting off inhibitory action of the brain or by emphasizing the excitomotor power of the anterior cornua, regulate the spasmodic condition of cases of progressive paraplegia. In fact, the question is of sudden or apoplectic paraplegia. An hypothesis of the pathogeny of such flaccid paraplegias, which seems at least logical, is ventured: The myoneure is excited from two principal sources, the pyramidal neuron and the centripetal protoneuron, of equal importance, as the suppression of one is fatal to the reflex.

The history is as follows: A man of twenty-five was admitted to the hospital on the first of April with a cold abscess on the upper internal part of the right thigh, situated immediately above the perineo-crural fold. The diagnosis was osteitis of the ascending branch of the ischium. After cocaineization of the spine the abscess was lanced and for several days the wound continued to discharge pus. On the 24th the pain was felt in the right shoulder and scapula and there was difficulty in extending the fingers. May 4, there was a slight diminution of the faradic and galvanic excitability of the triceps, radialis, posterior ulna and finger extensors, also the adductor of the thumb. The supinator longus was intact, on account of which fact a vain search was made for lead poisoning. By the middle of May the scapular pains had extended throughout the thorax and the upper limbs; the pain was spontaneous, continuous and severe, unaffected by manipulation. Movement was possible in the left hand, but muscular force was diminished; in the right were all symptoms of radial paralysis of central origin; the arm being raised, the forearm fell; hand extension was very difficult; lateral movements and those of fingers and phalanges were impossible. Already there was slight atrophy of the forearm and of the thenar and hypothenar surfaces. The electric symptoms were emphasized, but the supinator longus was still normal. Diminution in galvanic excitability was parallel to the faradic. Thus twenty-two days after first scapular pains there was paralysis of the radial nerve with muscular atrophy, except for the supinator longus. The lower limbs were unaffected though the wound of the thigh continued to discharge pus. Twenty-seven days after the first symptoms there was some weakness of the lower limbs, and the next day there was complete paraplegia, with fever. Both legs were impotent, although there were patellar reflexes, exaggerated on the right; plantar reflexes were weak but normal. Sensibility to touch was present, but not to pain, heat or cold; there was retention of urine. Presently the sense troubles extended to the umbilicus and lumbar puncture brought a slightly rose-colored liquid. Fever persisted, the tongue was dry, breath rapid; there was pleurisy on the right with a slight discharge; an eschar appeared on the left buttock and another on the right external malleolus. There was retention of urine and incontinence of fecal matter. One eschar ulcerated and a third appeared on the left malleolus, a fourth on the left heel. The entire left leg was edematous.

Anesthesia extended to the base of the thorax, and was absolute for all senses, stopping at a hypothetical inframammary zone. Plantar and tendinous reflexes were gone, only that of the fascia lata remaining. Hard pinching of the legs caused reflex movements of flexion, but pain was not perceived. A slight ptosis of the right eye next appeared, with

myosis and exophthalmia, without diplopia. Movements of the ball were normal. Deglutition was slightly painful. Edema extended to both legs. August 8, there was broncho-pneumonia in the right, and signs of tuberculous pulmonary infiltration. The general state grew gradually worse, with nocturnal delirium, oppression, polypnea, cyanosis. Death occurred September 4.

Autopsy.—Pulmonary tuberculosis, tuberculous osteitis of the right ischiopubic branch. Cranial meninges unaffected. External tuberculous pachymeningitis in the cervicodorsal region, extending from the third cervical to the first dorsal exclusively. A sheath of mamillated fungoid tissue, almost 1 cm. thick, envelopes this part of the spinal cord. In all this region the anterior and posterior roots are imbedded in fungoid masses, and entangled with the mass, the parts of which were recognizable only with the microscope. The microscopic alterations of the nervous substance were many, both in white and gray matter. It is especially to be noted that a large number of conductors are not involved in the anterior columns and in the lower lateral zones.

Compression of the cord was not the cause of this interruption of nervous tracts in white and gray matter; but acute inflammation of a very limited portion of the axis.

2. *Spasmodic Paraplegia and Medullary Tumor.*—What result is brought to the tendinous reflexes of the lower limbs by total transverse destruction of a dorsal or cervical segment of the spinal cord? There are two solutions given in this paper by Raymond and Cestan. According to certain neurologists the patellar reflex, to be evident, needs integrity of the medullary lumbar arc formed by the sensory ganglionic neurone and the motor neurone of the corresponding anterior cornu. If this intact reflex arc is separated from the encephalon by complete section of the dorsal or cervical medulla, the patellar reflex will disappear through shock to the lumbar region, but will soon reappear and there will be a slow, spasmodic paraplegia. If the paralysis of the flaccid type preserves its flaccidity, to explain the absence of contractions, one ought to section the lumbar segment, the medullary roots or the peripheral nerves. According to this opinion the lumbar cord possesses a veritable autonomy and the tracks of tendinous reflexes would be short ones, not passing to the encephalon. In opposition to this medullary theory is one which brings into play the encephalic centers; according to it a tendinous reflex cannot do merely with the intact sensory-motor lumbar arc, unless it is also in relation with certain superior encephalic centers. It is then simply by the mechanism of separation of the lumbar center from the encephalic centers that a complete and sharp section of the medulla determines a flaccid paralysis in spite of the appearance of descending sclerosis of the pyramidal fasciculus.

Often authors have considered only short, or at least subacute sections of the medulla, resulting in fracture of the vertebral column, vertebral osteitis which gives way, pachymeningitis, meningo-myelitis, or in very rapidly progressing tumor. Numerous facts have plainly shown that rapidly-appearing lesions accompany, in case of complete section, flaccid paraplegia, whatever hypothesis be taken to account for the flaccidity. Is the case similar with slow and progressive section? If by chance even a very slow evolution by an infectious meningomyelitis accompanies the transformation of a spasmodic into a flaccid paraplegia, one would suppose, from the toxic and infectious nature, that meningomyelitis would alter the lumbar neurones, whose integrity is indispensable to the manifestation of tendinous reflexes. The ideal process would thus be transverse medullary destruction of long duration, progressive,

made day by day and by a mechanical process without the intervention of a toxic-infectious factor. The experimental conditions can not be realized, especially in the ape, whose tendinous reflexes are nearest to those of man. Thus experimental physiology cannot solve the problem, but one must resort to the anatomico-clinical method. There exists in pathology a category of medullary tumors, psammoma, well localized, slow of development, which, starting on the meninges, little by little include the medullary segment in the fashion of a hard, foreign body, whose increase finally determines the destruction of the segment. A veritable experience of pathological physiology accompanies these. Two cases were observed of this sort, both of whom for several years presented a paraplegia always spasmodic with spinal trepidation, to the moment of death; at the end there was added anesthesia of the lower limbs, incontinence of urine and eschars. At autopsy it was found that a psammoma had filled the medulla in the region of the eighth dorsal segment. It may be objected that in spite of evidences the cord was not completely destroyed in the locality of the compression. Although a few nerves were found, these were included by the tumor and moreover complete degeneration of all fasciculi was observed above and below the impression. Granulations were also seen in the zones where the posterior and lumbar roots entered, and in spite of this, which would have involved flaccidity and lent weight to the point of view of destruction of the seventh dorsal, paraplegia was always markedly spasmodic, the patient's legs were rigidly extended and very active in the tendon reflex.

To explain the persistence of spasmodic paraplegia, there are but two hypotheses. It may be supposed that the tendinous reflexes, in adult as in the child, travel simply by the short medullary tracks and that the encephalic centers do not intervene in the production of tendinous reflexes and contraction. Hence one adopts the theory of the abnormal excitability of the short reflex track uniting the posterior cornu to the anterior by the sclerotic tissue of the pyramidal fasciculus; or the theory of the suppression of the inhibitory function of the pyramidal fasciculus; consequently in the cases, destruction of the dorsal medulla with secondary degeneration of the pyramidal fasciculus caused a spasmodic paraplegia.

JELLIFFE.

PERISCOPE.

American Journal of Insanity.

(1902. Vol. lviii, No. 3. January.)

1. The Trial, Execution, Autopsy and Mental Status of Leon F. Czolgosz, alias Fred. Nieman, the Assassin of President McKinley. CARLOS F. MACDONALD.
2. The Post-mortem Examination of Leon F. Czolgosz, the Assassin of President McKinley. EDWARD ANTHONY SPITZKA.
3. The Twentieth Century Methods of Provision for the Insane. FREDERICK PETERSON. Discussion. CARLOS F. MACDONALD.
4. The New York Conference of Charities, November 20 to 23, 1901.
5. Recent Advances in Psychiatry and Their Relation to Internal Medicine. STEWART PATON.
6. Hallucinations and Illusions. GEORGE T. TUTTLE.
7. Notes on the Hebrew Insane. FRANK G. HYDE.
8. Traumatic Encephalitis. HENRY P. FROST.
9. A Review of the Pathological Work Done in the Hospital for the Insane at Independence, Iowa. GERSHOM H. HILL.
10. The Pathology of Insanity. LOUIS C. PETIT.
11. A Case of Idiopathic Internal Unilateral Hydrocephalus with Recurrent Hemiplegic Attacks. WILLIAM CHARLES WHITE.

12. Letters from France. A. V. PARANT.

1. *The Trial of Czolgosz.*—The trial was held before Hon. Thomas C. White, Presiding Justice, in the city of Buffalo, on September 23 and 24, 1901. It was unattended by any unnecessary delay, consuming only two court days, the actual time occupied between the beginning of the trial and the rendering of the verdict of guilty being eight and a half hours. When Czolgosz appeared in court he was dressed neatly and was cleanly in appearance. The preparation and trial of the case on the part of the people was almost faultless. Shortly after his arrest District Attorney Penny secured from Czolgosz a detailed statement concerning his premeditations and preparations for the crime, and also of his movements for some time prior to and up to the time of the shooting. Within a few hours after the commitment of the crime the prisoner was put under the observation of local experts in mental disease. These physicians, Drs. Fowler, Crego and Putnam, had free access to the prison at all times prior to his conviction. The District Attorney also permitted conferences between the experts for each side, and gave those for the defense free access to all facts and information in his possession. This course was tantamount to the appointment of a commission of five experts—three for the prosecution and two for the defense—to determine the prisoner's mental condition, and marks a new departure in the methods of expert testimony which minimizes the danger of contradictory expert opinions.

It appears that there was substantially no preparation for the defense beyond a fruitless effort of counsel to confer with the prisoner and the examination made of him by Dr. Hurd and the writer, and their statement to counsel of the conclusion that he was not insane. In court no plea was entered by the attorneys for the defense, but Czolgosz himself entered a plea of guilty to the indictment. This was promptly rejected by the Court, who directed that one of not guilty be entered.

Throughout the trial the defense was conducted in a perfunctory manner and no testimony was offered on the defendant's behalf.

The jury returned a verdict of guilty of murder in the first degree in less than half an hour. Czolgosz heard the verdict of the jury without appreciable display of emotion. He was remanded to jail for two days, and on September 26 was sentenced to be executed by electricity at Auburn Prison in the week beginning October 28, 1901.

The Execution: Czolgosz was executed on the morning of October 29, 1901. As he entered the death chamber he appeared calm and self-possessed; his head was erect and his face bore an expression of defiant determination. While the preliminary arrangements were being made he addressed the witnesses in the following significant language: "I killed the President because he was an enemy of the good people—the good working people. I am not sorry for my crime. I am sorry I could not see my father."

At the instant the current was applied the body was thrown into a state of tonic spasm involving apparently every fiber of the entire muscular system. At the same time consciousness, sensation and emotion were apparently abolished, and organic life was destroyed within a few seconds thereafter.

The Autopsy: An abstract of paper by E. A. Spitzka. The Mental Status: There were several examinations of the prisoner made for the purpose of determining his mental status, but the details will not bear abstracting. The conclusions reached by the writer, viewing the case in all its aspects and with due regard to the bearing and significance of every fact and circumstance relating thereto that was accessible to him, is that Leon F. Czolgosz on September 16, 1901, when he assassinated Pres-

ident McKinley, was in all respects a sane man, both legally and medically, and fully responsible for his acts.

2. *The Post-mortem Examination of Czolgosz* was complete. There were no gross pathological conditions found in any of the viscera. The brain, which weighed fifty-one and a half ounces (1,460 gmms.) was carefully examined and its convolutions and fissures showed no evidences of arrested development or of pithecoïdal anomalies. So far as our knowledge of the correlation of brain-structure and brain-function extends there was nothing in the brain of the assassin to condone his crime because of mental disease due to intrinsic cerebral defect or distortion.

3. *Methods of Provision for the Insane.*—After a brief discussion of the history of the treatment of the insane the speaker advocated provisions for the care of the insane similar to those at present employed in Germany: Small hospitals for the acutely insane in cities, and colonies for the chronic insane or mixed classes of the insane in the adjacent country. The hospitals for the acutely insane should be conveniently located and should have dispensary departments. One feature of these hospitals would be to furnish teaching facilities for the professors in the under- and post-graduate medical colleges. Patients should be received for diagnosis as emergency cases without legal commitment. The colony should be situated in the country where out-of-door employment could be added to other remedial agents. It is impossible, however, the speaker points out, to make any arrangement which will positively divide the acute from the chronic insane, cases always, as experience shows, arriving at either institution regardless of the nature of their alienations, so that a system of easy communication between the two classes of hospitals is essential. The paper was discussed by Dr. C. F. MacDonald, who agreed essentially with the speaker, emphasizing particularly the inability to separate the acute from the chronic insane absolutely.

4. *The New York State Conference of Charities.*—The Committee on the Mentally Defective rendered its report and Dr. Peterson presented the paper abstracted above. The meeting discussed the status of the insane, of the feeble-minded, idiotic and epileptic, and of the mentally defective in prisons.

5. *Recent Advances in Psychiatry.*—This paper was read before the Marion County Medical Society, and will not bear abstracting, being an essay.

6. *Hallucinations and Illusions.*—Paper will not bear abstracting.

7. *Notes on the Hebrew Insane.*—The article is based upon the case records of the admissions to the Manhattan State Hospital, East, between December, 1871, and November, 1900, in all, 17,135 cases. Out of this number, 1,722, or 10.05 per cent., were Jews, of whom 72, or 4.18 per cent., gave syphilitic histories, and 95, or 5.516 per cent., were alcoholic. Both of these percentages are lower than those found among Christians. In another set of statistics dealing with 3,710 admissions, 15.44 per cent. were Hebrews. Of these 5.58 per cent. were syphilitic and 5.24 per cent. alcoholic. Paresis was present in 18.05 per cent. of the Hebrews admitted. The influence of hospital life on the Hebrew patient is good, and the recovery rate in those under 30 years of age, high. But as they immediately return to their work when discharged, whether cured or not, they are frequently returned.

8. *Traumatic Encephalitis.*—The case reported is that of a locomotive engineer, 51 years of age, who was admitted to the Buffalo State Hospital in August, 1899. The family and personal histories were negative. Patient was struck on the head by a steel bar in January, 1899, and rendered unconscious for a few moments, but continued his trip.

Headache continued from that time, and 28 days later patient had a convulsion. A second convulsion occurred two months later, and during the succeeding six weeks he had fourteen seizures, but was able to continue at his occupation. From that time until the following September he had no convulsions, but his mental power declined steadily, and at times he was irrational and violent. He also suffered from visceral and auditory hallucinations. Later he became restless and confused and emotional and depressed. From September on convulsions occurred at irregular intervals and he became more and more confused, and finally unconscious of his surroundings. Death occurred in coma, on February 24, with a temperature of 106 deg. Fah., pulse 140, and was ascribed to cerebral hemorrhage, the kidneys being normal. Post-mortem showed symmetrical areas of softening at the base in the position where a blow upon the vertex would act by contrecoup, together with beginning arterial sclerosis in brain and kidneys. Also a recent gross cerebral hemorrhage in the hemisphere corresponding to the injury and in which the effects of contrecoup were most pronounced and in which also the vessels were most involved in inflammatory infiltration.

The author's conclusions are that the convulsions and mental symptoms were directly due to the lesions at the base, and that the convulsions hastened and intensified the pathological condition in the vessels and thus led to death from cerebral hemorrhage.

9. *Pathological Work at Independence, Iowa.*—The plans which have been outlined and followed for pathological and clinico-pathological work at this hospital are such that very little of value should escape observation. The work is all carefully classified and recorded by means of the card catalogue system.

10. *The Pathology of Insanity.*—The author refers to the gross pathological findings in fifty-six autopsies, made at Manhattan State Hospital, East, during the year ending September 30, 1900. With the exception of the paretics, where the findings in the several cases corresponded somewhat closely with each other, the conditions were varied. For details the reader is referred to the tables accompanying the article.

11. *Idiopathic Unilateral Internal Hydrocephalus.*—The patient, a colored woman, aged seventy-four years, had several hemiplegic attacks of short duration, extending over a period of about fourteen months, and which were ascribed to cerebral embolism. The mental symptoms, for which she was admitted to the Central Indiana Hospital for the Insane, began with acute mania and terminated in dementia with occasional maniacal outbreaks. Death occurred in coma. The autopsy showed a dark area, seen through the dura, over the left parietal region. When the dura was removed there was a forcible escape of a light, straw-colored fluid, and the left hemisphere over the Rolandic area was considerably depressed. The convolutions were extremely flattened. When the brain was removed a wide gap was found in the temporal lobe which communicated with the opening made by the removal of the dura. The inner wall of the lateral ventricle could be seen through the gap. The dilatation was mainly in the descending horn of the ventricle and there were only about 7 mm. of brain tissue between it and the fissure of Sylvius. The left vein of Galen was only about one-third the size of the right. The choroid plexus on the left side was twice the size of the right and showed numerous nodulous masses attached to and within it. On microscopic examination these were found to be hyaloid masses. There was no other gross pathological condition found in the brain, except that here, as well as elsewhere throughout the body, there was marked calcareous degeneration in the blood vessels. The only causative

lesion found, is therefore, the left internal hydrocephalus due to the obstruction in the left choroid plexus.

12. *Letter from France*.—This refers to the colonization of the insane in families. The writer gives a summary of the scheme of family care of the insane as it exists today in France. The results, though in certain respects unsatisfactory, speak well for the plan.

H. L. WINTER (New York).

MISCELLANY.

HYSTERIA AND CRIME. F. NETRI (Archivos de Criminología, Medicina Legal y Psiquiatria, Year 1, No. 2, March, 1902).

The author, after reviewing the clinical manifestations of hysteria in relation to the possible commission of crime, from simple mendacity and simulation for the purpose of exciting sympathy and attention, to imaginary grievances, jealousies, religious exaltation and temporary mental alienation, adds susceptibility to hypnotic suggestion as a means by which the hysterical subject might be incited to crime by the evilly-disposed; and concludes that many a prison should be closed and in place thereof refuges opened for the treatment of those whose abnormal mentality has led to crime through fleeting emotivity or grave psychic disturbance.

R. L. FIELDING (New York).

A CASE OF INFANTILE CEREBRAL PALSY WITH AUTOPSY FINDINGS. DR. L. PIERCE CLARK and DR. T. P. PROUT (Journal of American Medical Association, April 26, 1902).

The lesions found at autopsy in old infantile palsy cases include such varied lesions as porencephaly, small and indurated convolutions, single or multilocular cysts and microgyria.

The whole hemisphere or cerebellum may show atrophy or non-development. There may be low-grade formative connective tissue, cysts, calcareous plaques, internal or external hydrocephalus. The following case of infantile cerebral palsy developing at two years of age is of interest. There was a history of fever, convulsions and great prostration for several days, paralysis of the entire right side. The arm remained permanently useless, in a condition of spastic rigidity. At the age of six, epileptiform crises developed. The patient became feeble minded and noticeably aphasic after the epileptic attacks. Death occurred at the age of 29 in a condition of stupor and delirium. The autopsy showed a bony formation two inches long attached to inner surface of the dura, considerable edema of the pia-arachnoid; left anterior central artery small; left central hemisphere softened, microgyria, cystic degeneration and pseudo-porencephaly of entire parietal region of the left side. Two cysts were as large as an English walnut. Secondly the cerebral lesion caused mal-development (fossæ) of the whole right cerebellar lobe, and extreme atrophy of the left thalamus and inferior olive. The cranial fossæ at the base also participated in the pathological condition.

W. B. NOYES (New York).

CASE OF BROWN-SÉQUARD'S PARALYSIS. ARTHUR R. EDWARDS (Journal of American Medical Association, March 15, 1902).

The following symptoms resulted from a stab in the neck in the median line posteriorly, from which cerebrospinal fluid was obtained. The right pupil was larger than the left. Paralysis of both upper extremities and left lower extremity, occurred. Tactile sensation was lost upon the right side, especially in the arm and leg, while upon the trunk the anesthesia did not quite reach the median line. Analgesia was abso-

lute upon the right side, as was the temperature sense of heat and cold. On the side of the hemiplegia there was no particularly marked hyperesthesia, save for pain on movement of the arm and leg, and extreme sensitiveness of the soles of the feet, and no genuine hyperesthetic zone. No anesthesia of left side, except small patches over left shoulder. The right knee-jerk was normal, while the left was much exaggerated and disappeared after twelve hours, and did not return for two weeks. The cremasteric, abdominal and mammillary reflexes were abolished on both sides. Retention of urine and absolute constipation for days occurred, after which involuntary evacuations of urine and stools persisted for eighteen days. There was a rise of temperature during the first week. A year after the injury the hyperesthesia on the left side had disappeared, while the anesthesia of the right side persisted, tactile sensation being normal. The left-sided, deep reflexes were exaggerated and the limbs were more or less spastic, but not atrophied.

The writer draws the following conclusions:

(1) The lack of correspondence between hemispinal section in certain animals and in man is probably due to different anatomico-physiologic conditions.

(2) The Brown-Séquard syndrome undoubtedly exists, although less an entity than a symptom.

(3) Variations from the original type occur from etiological factors and with varying extent of the cut or other lesion.

4. The secondary temperature in the case reported was probably due to subsequent myelitis.

(5) Few vasomotor symptoms were observed.

(6) The contra-lateral anesthesia was not dissociated, but total, for all varieties of sensation, as in the original description of Brown-Séquard paralysis.

(7) It was a typical case in the bilateral lesion, the crossed and persistent monoplegia, the shallow respiration and the bladder and rectal disturbance.

(8) Spasticity, while often suggesting incomplete lesion and irritation, in that case was persistent, and suggested bilateral lesion.

(9) While a diagnosis of hemato-myelia might have been made, the clinical history, with delirium, pain in the head and neck, with fever, indicated late myelitis.

W. B. NOYES (New York).

CEREBROSPINAL MENINGITIS DUE TO FRIEDLÄNDER'S PNEUMOBACILLUS.—K. Jassinger (*Centralblatt für Bakteriologie*, 1901, July 12).

Up to the present time this bacillus has been found in only a few cases of purulent cerebrospinal meningitis. The author cites a case occurring in a patient, sixteen years of age, who was suddenly taken ill with chills, followed by a permanent rise of temperature to over 101° F. There were present uncontrollable vomiting, intense headache, general muscular pains, profuse perspiration, irregularly contracted pupils and incontinence of urine and feces. Coma supervened and death took place on the seventh day. The clinical diagnosis was cerebrospinal meningitis, and upon autopsy the characteristic pathological lesions were found. A cover-slip preparation of the meningeal pus stained by methylene blue showed both intra- and extracellularly a short, round bacillus, sometimes occurring in pairs. The twenty-four-hour bouillon growth showed a general diffuse clouding with pellicle formation. Agar cultures showed a white surface growth and gelatin plates small, round, opaque colonies. Stab cultures in gelatin after forty-eight hours' growth showed a typical development along the line of inoculation.

No coagulation was produced in milk. Glucose was fermented. Gram's stain was not retained. The organism was pathogenic for mice in twenty-four hours by intraperitoneal inoculation, capsule bacilli being obtained from their heart's blood. He therefore regards the organism found as identical with Friedländer's pneumobacillus.

HIGLEY.

MYASTHENIA GRAVIS. E. Bramwell (Scottish Medical and Surgical Journal, 1901, May).

Bramwell gives the history of the first case of myasthenia gravis reported in Scotland, and 9 such cases have come under his notice; elsewhere 80 or 90 cases have been reported. It is often mistaken for hysteria. Rapid fatigue of the muscles is the prominent symptom. Rapid exhaustion by the faradic current constitutes the myasthenic reaction. The disease may be due to a toxin of endogenous origin, or some congenital defect in construction or mode of functioning of the neuromotor apparatus. In one-quarter of the recorded cases there has been a neuropathic tendency; some have followed acute infective diseases, which probably acted simply as predisposing agents. Prognosis is uncertain; the disease is often fatal, generally from dyspnea. A favorable prognosis should be given the patient, as psychic impressions exert considerable influence, while friends should be warned of the gravity of the case. The affected muscles should be spared and if symptoms are severe, the patient should be kept in bed. The larger portion of the food should be taken early in the day before fatigue occurs, solid food should be minced, faradism avoided though galvanism may be tried, and when dyspnea occurs the tongue should be drawn forward, oxygen saline transfusion and artificial respiration tried.

JELLIFFE.

THE ACTION OF ALCOHOL ON THE NEURONES. J. Arm and Kleefeld (Journ. de physiol. et path. gen., July, 1901.)

Observations along this line are important in that modifications of the central nervous system occasion alterations in respiration, circulation and temperature range. These experimenters trephined the parietal region of a rabbit's skull under antiseptic precautions and without the use of morphine, ether or chloroform. They then closed the wound superficially and after leaving the animal at rest for two or three days injected into the jugular vein 100 c.c. of a seven per cent. aqueous alcoholic solution. After two or three minutes they raised a portion of the cerebral cortex. This was fixed in a mixture of potassium bichromate and osmic acid and submitted to the rapid manipulation of Golgi. In the second series they introduced 100 c.c. of a 15 per cent. alcoholic solution into the stomach of rabbits and made similar examination of the cerebral tissue. Here the pathological changes were increased in amount over those found in the first series. As the result of this work, they conclude that the modifications produced by alcohol are not to be considered as a form of degeneration of nerve-cells, since the alterations appear in a very few minutes after the injection of the alcohol. The moniliform (beaded) state and disappearance of the piriform appendages are seen only in the finest protoplasmic prolongations and far removed from the cell-body. As the dose of alcohol is increased this condition augments and approaches the body of the cell. This appearance is characteristic and not like that produced by chloroform, morphine or chloral hydrate.

Certain prolongations remain absolutely normal even after large alcoholic dosage. The axis-cylinder submits to alterations only after very large dosage (100 c.c. of a 25 per cent. solution). The cell-body does not seem to be in any way changed. This is at variance with the views of Demoor and Stefanowska. These alterations are able to explain all the phenomena of inebriety. JELLIFFE.

ESSENTIAL MYOTONIA. A. Duse and Astolfoni (*Rivista sperimentali di Freniatria*, Vol. 26, fasc. 2, 3).

The history is given of a patient seventeen years of age, of marked neurotic heredity, who at first developed epileptiform convulsions, following head trauma. Eight days later these disappeared, but for three months the patient suffered from continuous migraine; following this myotonia appeared. This myotonia was of a wandering type. At first it involved the upper limbs, then the cervical muscles were affected and it finally became more or less permanent in those muscles of the right side of the neck innervated by the *recurrens*, the *facialis*, the superior cervical plexus, the pharyngeal and superior and laryngeal nerves. There was reaction to mechanical excitation and also the lacunar reaction of Benedict. The authors hold that the origin of the affection is cerebral and exclude an organic traumatic causation. COLLINA (Bologna).

CONTRIBUTION TO THE PHYSIOPATHOLOGY OF LANGUAGE. G. Mingazzini (*Rev. sperimentali di Freniatria*, 1901, Vol. 26).

The clinical history is given of a woman who during life showed symptoms of a cerebral tumor, but had never had any aphasia. On autopsy a sarcoma was found between the inferior and middle frontal convolutions on the left side. Much crushing and distortion of the convolutions was produced. From his study of the case, the author reasons that in the early stages of life the functions of language are common to both Broca's convolutions, but as age advances the functions of the right convolution become reduced and a concentration becomes marked in the left; so much so that the right convolution subsequently loses its functional (not its anatomical) relations with the verbo-acoustic centers of the left side. It maintains a quasi automatic center of language.

In the case under discussion the tumor was of slow growth and it was probable that during the long time of development of the tumor substitution of language function had taken place.

COLLINA (Bologna).

Book Reviews

THE MENTAL STATE OF HYSTERICALS. A Study of Mental Stigmata and Mental Accidents. By PIERE JANET, Litt. D., M.D., Professor of Philosophy at the Collège Rollin. Translated by CAROLINE ROLLIN CORSON. G. P. Putnam's Sons, New York and London.

Mrs. Corson has performed a signal act of merit in giving to the medical public this excellent treatise of Janet. It has been known for many years by the French-reading physician, and its temperate and judicial handling of an extremely intricate problem has commended it to the respect and admiration of all.

Hysteria here is viewed as a generalized neurosis which affects the entire organization of the individual. It disturbs the physiological functions and thus gives rise to the many and varying somatic features of the malady; it disturbs the psychological functions and presents a protean group of mental symptoms.

The author would divide the study of hysteria into the consideration of two main groups. These he indicates in the first place as the more organic features of the disease, the *Mental Stigmata*; and secondly, as the *Mental Accidents* of the malady. Under the heading of mental stigmata are grouped, Anesthesias, Amnesias, Abulias, Motor Disturbances and Modifications of Character; while grouped as mental accidents are the phenomena of Suggestion and Subconscious Acts, Fixed Ideas, Attacks, Somnambulism and Delirium. A concluding chapter on Hysteria from a Psychological Point of View sums up in very short compass some of the most suggestive features of this intricate disease.

The translator has had singular facility, we believe, in catching the idea of the author and in presenting in excellent English a noteworthy contribution to psychological medicine.

JELLIFFE.

DEMENTIA PRECOCE. Per DOTT LORENZO MANDALARI. A Tocca. Napoli.

Precocious dementia in its various varieties is in need of systematic and comprehensive revision. The present contribution aims solely to add to the facts which are slowly accumulating; it does not seek to generalize. It consists of a clear-cut series of clinical pictures.

JELLIFFE.

STUDII CLINICI ED ANATOMO-PATOLOGICI SULL'IDIOZIA. Per DOTTOR G. B. PELLIZZI, medico ordinaria a nel R. Manicomio, Docente di Psichiatria nell'università di Torino. Fratelli Bocco. Torino.

The author presents here three studies of idiocy. Idiocy and tuberculous sclerosis; a classification of idiocy and epilepsy.

In the first study after an extended historical summary of the subject, brief histories of three patients are given followed by full discussion of the clinical and pathological features, thus making a monographic treatment of this rare development of sclerosis.

In the second study on the classification of idiocy, Bourneville, Hammarbergs and Kaes are carefully studied and compared. The author makes the following group.

Class I. Idiocy of pure defect of development of the cerebrum, or idiocy of endogenous causation; here are classed (1) microcephalus,

true and pure; (2) idiocy of irregular development, with three sub-groups: (A) idiocy with grave deformity of conformation, (a) defect of part of encephalon, (b) lack of hemisphere or lobe or convolution. (B) Idiocy of Agenesis without grave lesion of brain; (a) agenesis of convolutions, (b) partial agenesis of convolutions. (C) Hydrocephalic Idiocy.

(3) Idiocy of abnormal histology of cortex, (A) heterotopia of the cortex, (B) disseminated tuberosus sclerosis, (C) diffuse hypertrophic sclerosis, (D) a type described by Roncoroni. Sachs' Congenital Amaurotic Idiocy falls in group C or D, according to the author.

(4) Idiocy of Cerebral Tumors, glioma or neuroglioma.

(5) Cretinoid Idiots. (A) Endemic and (B) Myxedematous.

Class II. Divided into five groups.

(1) Idiocy of pathological processes in the brain. (A) Idiocy of atrophic sclerosis (polioencephalitis of Strümpell, (B) Hydrocephalic idiocy of cerebral disease.

(2) Idiocy of pathological processes of the meninges. (A) Meningo-encephalitis, (B) Meningitic idiocy, (C) Hydrocephalic idiocy of meningeal disease.

(3) Idiocy due to pathological bony envelope, rachitic and scaphocephic.

(4) Idiocy due to infantile disease—chorea, cerebral syphilis, disseminated sclerosis, paralysis agitans of children.

(5) Idiocy of trauma, at birth or after birth.

Class III. Mixed Forms of Idiocy.

(1) Idiocy of primary development with added pathological processes.

(2) Idiocys with pathological processes causing arrest of development in different parts of the brain.

Complete analyses of the clinical features of these types are given.

The third short study is a résumé of modern work bearing on this question. The volume is worthy of high praise. JELLIFFE.

NEUROLOGICAL TECHNIQUE. IRVING HARDESTY, Ph.D. University of Chicago Press.

This book, comprising 180 pages, will serve as a valuable introduction and laboratory guide, to the student endeavoring to perfect himself in the microscopical technic of the nervous system. All of the methods now in vogue, for the purposes of histological and pathological research, are treated clearly and concisely.

The description of each method is so arranged that the reagents required may be prepared first; then follow the necessary steps with the time allotted to each, thus allowing a considerable economy of time. Many practical suggestions are inserted, upon which the success of a method often depends, and usually learned from a teacher or by sad experience. The manner of preparing permanent museum specimens, the dissection of the central nervous system, and the nomenclature for the nervous system and special senses as devised by the Basel anatomical commission (B N A), are included.

The scope and manner of presenting the subject adapt it rather to the uses of the student than as a book of reference for the learned and trained technician.

J. R. HUNT.

News and Notes

DR. M. H. BOCHROCH has been made Demonstrator of Nervous Diseases in the Jefferson Medical College.

DR. ALFRED has been made Instructor of Nervous Diseases in the same institution.

DR. WILLIAM PICKETT has been made Instructor in Insanity in Jefferson Medical College.

DR. J. G. ELLIOTT, Assistant Physician in the Hudson River State Hospital, died on May 12, 1902. He was of English birth, aged thirty-one years, and graduated from the University of Buffalo in 1896.

DR. JOHN PUNTON, Editor *Kansas City Medical Index Lancet*, has been confined to his bed for the past three weeks with La Grippe. He is now fully recovered.

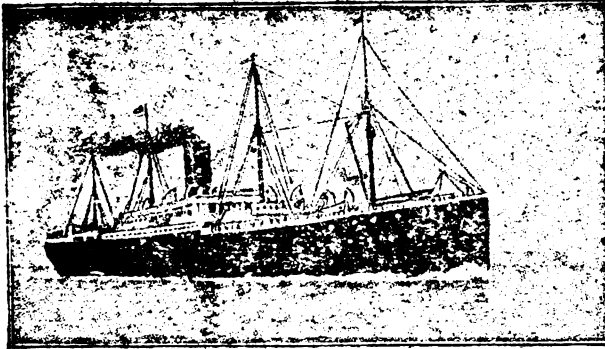
DR. DAVID SHIRES, of McGill University, has received the appointment of Professor of Nervous Diseases in the University of Vermont, Summer Session.

PROGRAM of the 28th Annual Meeting of American Neurological Society, held in New York, June 5, 6, 7, 1902.—Thursday, June 5. Morning session at half past nine. Address by the President, Dr. Joseph Collins, of New York; Contribution to the Study of Myospasms: Myokymia, Myoclonus Multiplex, Myotonia Acquisita, Intention Spasm, by Dr. George L. Walton, of Boston; Paramyoclonus Multiplex. Case Report, by Dr. F. W. Langdon, of Cincinnati; Disseminated Sclerosis Causing Ocular Palsies, and Spasticity with Lost Knee-jerks, Necropsy; Traumatic Myelitis causing Symptoms of Central Hematomyelia, Necropsy, by Dr. William G. Spiller, of Philadelphia; A Case of Combined Tabes and Disseminated Sclerosis, by Dr. Wharton Sinkler, of Philadelphia; Course of the Sensory Fibers in the Cord and Some Points in Spinal Localization as Shown by a Case of Partial Section of the Cord by a Stiletto, by Dr. Morton Prince, of Boston; The Present Condition of Six Cases of Exophthalmic Goiter after Thyroidectomy, by Dr. J. Arthur Booth, of New York; Autopsy in a Case of Adiposis Dolorosa, by Dr. F. X. Dercum and Dr. D. J. McCarthy, of Philadelphia; On Amaurotic Family Idiocy, with Report of Autopsy, by Dr. B. Sachs, of New York; Amyotrophic Lateral Sclerosis, Autopsy, with Study of the Neuron Degenerations, by Dr. Graeme M. Hammond and Dr. M. G. Schlapp, of New York; The Postero-lateral Scleroses, by Dr. Charles W. Burr and Dr. D. J. McCarthy, of Philadelphia; Report of a Transverse Lesion of the Mid-Thoracic Segments, excepting the Posterior Columns, by Dr. Adolf Meyer, of New York; Paralysis of all Four Limbs and of One Side of the Face, with Dissociation of Sensation, Developing in a Few Hours and Resulting from Meningo-myo-encephalitis, by Dr. Charles K. Mills and Dr. William G. Spiller, of Philadelphia; A Report of a Case of General Paresis, with Autopsy, by Dr. Stewart Paton, of Baltimore; Stereoscopic Study of the Brain, Illustrated, by Dr. L. A. Weigal and Dr. Edward B. Angell, of Rochester; Multiple Neuro-Fibromatosis, by Dr. Joseph Fraenkel and Dr. J. R. Hunt, of New York; Report of a Case of Spinal Cord Tumor, Fourth Cervical Segment, Operation, Re-

moval, by Dr. James W. Putnam and Dr. William C. Krauss, of Buffalo; A Case of Traumatic Paraplegia and Hysteria Major with Specimens, by Dr. C. L. Dana, of New York; Note on Cell Changes in a Case of Complete Compression of the Cord, by Dr. John Jenks Thomas, of Boston; Progressive Paralysis of all of the Extremities from a Focal Lesion of the Upper Cervical Cord, by Dr. F. X. Dercum, of Philadelphia; The Mechanism of the Plantar Reflex, by Dr. Philip Coombs Knapp, of Boston; Hemorrhage into the Medulla Oblongata (Contribution to the Anatomy of the Median Fillet). Br. Dr. D. J. McCarthy and Dr. F. Savary Pearce, of Philadelphia; Two Cases of Cerebral Abscess, with Presentation of Specimens, by Dr. William M. Leszynsky, of New York; Unilateral Internal Hydrocephalus, and Bilateral Contracture, from Inflammatory Exudate about the Foramen of Monro; Symptoms of Cerebellar Tumor caused by Internal Hydrocephalus from Occlusion of the Aqueduct of Sylvius, By Dr. William G. Spiller, of Philadelphia; A Case of Acromegaly with New Formation of Nerve-cells in a Split-off Part of the Nervous Portion of the Hypophysis; Demonstration of Specimens of Central Parenchymatous Degeneration and Remarks on the Clinical Symptom-complex, by Dr. Adolf Meyer, of New York; Vascular Diseases in their Relation to the Nervous System, by Dr. Edward D. Fisher, of New York; Arteriosclerosis of the Spinal Cord, By Dr. William Hirsch, of New York; Reynaud's Disease with Special Reference to the Etiology, Pathogenesis and Nosology, by Dr. B. Onuf, of New York; Acute Hemorrhagic Encephalitis, by Dr. Herman H. Hoppe, of Cincinnati; Herpes Zoster and Paralysis, by Dr. Philip Coombs Knapp, of Boston; Division of the Posterior Spinal Roots for Amputation Neuralgia, by Dr. Philip Coombs Knapp, of Boston; Narcolepsy, with Report of a Case, by Dr. E. D. Bondurant, of Mobile; Pseudo Epilepsies, by Dr. William Browning, of New York; The Overlapping of Hysteria and Epilepsy, by Dr. James J. Putnam, of Boston; A Severe Hysterical Contracture of the Leg, and Its Treatment, by Dr. Frank R. Fry, of St. Louis; A Case of Psycho Motor Epilepsy, by Dr. Ira Van Giesen, of New York; A Case of Meningo-Myelitis following Typhoid Fever, by Dr. Theodore Diller, of Pittsburg; A Study of the Case of Czolgosz, the Assassin of President McKinley, by Dr. Walter Channing, of Brookline; Three Cases of Insanity in which There Were Peculiar Motor Manifestations, by Dr. H. A. Tomlinson, of St. Peter; Neuropsychical Sequelæ of Operations, by Dr. Smith Baker, of Utica; Angio-neurotic Edema, by Dr. Joseph Sailer, of Philadelphia.

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July, 1902

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The Philadelphia Neurological Society and

The Chicago Neurological Society

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FOREIGN AND DOMESTIC AGENTS

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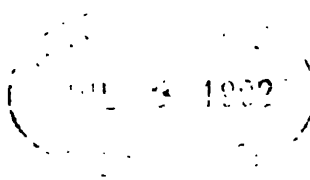
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Volume 29.

July, 1902.

No. 7.

THE
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Original Articles.

PRESIDENTIAL ADDRESS.*

By JOSEPH COLLINS, M.D.

In opening this, the Twenty-eighth Annual Meeting of the American Neurological Association, it may be permitted your President to dwell for a few moments upon the prosperity of our Guild. A prosperity that is shown by its full membership, its waiting list, and by the character and the amount of work that it has done, particularly in the last few years. Finally, I desire to say a word on the influence that this Association has had in promoting mutual respect and good fellowship among those laboring in the field of neurology throughout this country.

When one examines the transactions of the Association in its earlier years, he sees at once the great change that has come about. In 1877 there were 36 members in the Association, and at the annual meeting held at New York the attendance was 12. Only one member came from out of town, and he came, probably, because he was President. Six years later, in 1883, the membership had increased somewhat, but only 14 members attended the meeting in that year. About this time many of those who have since been the vertebræ and brain of the Society, came in, and by their suavity and

*Read before the American Neurological Association, June 5, 1902.

earnestness counteracted the internal dissension which threatened to wreck the Association. At the same time they gave it a scientific atmosphere which has succeeded in bringing the Association to its present proud place among the national societies.

Today, the membership is full, there are several names already familiar to neurologists on the waiting list, and the number of papers presented is so great that they cannot be got through with in the three days which we devote to our meeting. As to the quality of the work indicated by the program, all that can be said is that it is our best. We should not be expected to put further estimation upon it.

In a large body such as this, Death, the Inevitable, takes yearly from our ranks. At this meeting the Chair fortunately has but two to record. The brightest light in neurology on the Western horizon went out in the death of Dr. Eskridge. A Pennsylvania man, driven from a career on his native heath by tuberculosis, who obtained within a few years in the land of his adoption a secure place in the affections of his fellow workers at Kansas City, and in the estimation of his fellow specialists in the entire country. As a clinical neurologist, Dr. J. M. Eskridge had few superiors. As an earnest, conscientious, hard worker, he had none.

Dr. Charles Henry Brown, who was well known to all of us, found the *Journal of Nervous and Mental Disease* in a defunct state. After several years of struggle, during which time he gave to it his best energy and his most strenuous concentration, he had the satisfaction of knowing that it stood the test of comparison with the best of the special journals.

A pioneer in neurology died a few weeks ago. When Meredith Clymer began his studies of nervous disease the field was as trackless and unbroken as the region beyond the Alleghenies when Daniel Boone broke its virginal soil.

Two generations have come, and are going since then, and while the opportunity offers, one of the latter generation desires to record an appreciation of the truly remarkable work which this Nestor of American neurologists did nearly a half century ago. He had withdrawn from the field before this Society

was organized, therefore his name is not associated with its annals. But in the proceedings of that great unorganized society, the "World's Best Work," his name is distinctly to be read.

I venture to believe that the President of this Association can serve its members in no more satisfactory way than by putting before it briefly as the time compels, a succinct epitome of the most important work that has been done in neurology during the term of his office. This I shall now attempt to do. Although no epoch-making contributions have been recorded, examination of the literature shows that there has been no dearth of effort to solve the many problems in anatomy and pathology with which we are confronted.

The first and most important question is: What is the status of the neurone doctrine today? Is the neurone an anatomical, pathological, developmental and functional unity, such as the vast majority of neurologists have believed it to be during the past ten years, or is it necessary in view of recent investigations to change our conception of the neurone, not only in regard to it as a unity, but as to its mode of communication or connection with other neurones.

Five years ago many believed that Apáthy dealt the neurone theory a staggering blow when he showed that in the ganglia of the leech and the earthworm there was a fibrillar network which passed without breach of continuity between and through the bodies of nerve cells. Although Apáthy's claim has not been verified by others, or further substantiated by himself, the investigations of Held tend to corroborate, in a measure, Apáthy's claim. Held has shown that in the cells of several nuclei of the pons, in the cortex of the cerebellum, and in the anterior horns of the cord of the rabbit, it is possible to trace an increasing intimacy of union between terminals of axones and cell-bodies. About the time of the animal's birth the terminals come in contact with the cell-bodies and gradually fuse with it by a process which Held calls "conrescence." This conrescence is first evidenced by a layer which is more highly refractive than its surroundings, and, later, by slightly different texture and staining reaction. There have not been lacking other

investigators who have maintained with more or less convincing argument that there is structural connection between neurones. Hill¹, as you know, described a continuity by means of fine, cord-like threads, stretching across from fiber to fiber, and Verworn² says that in adults in many cells there is direct continuity.

The results of these investigations are not in reality antipathic to the neurone theory at all, when the theory of the neurone's individuality and discontinuity is not held too strictly,* nor do all of the investigators just mentioned believe that their findings invalidate the neurone doctrine. Held, for instance, distinctly disclaims such imputation. The concrescence of Held does not bespeak a structural communication between the neurones. It assumes that embryologically the units are anatomically independent, but that in later development there is a fusion without structural blending. It seems to me that it must be conceded that ontogenetically neurones become more intimately united in series, and that such intimacy is structurally heightened by use.

Although the conclusions of the authors just mentioned can be reconciled with the neurone doctrine, as it is interpreted today, the recent work of Bethe³, and Ballance and Stewart⁴, presents greater difficulties. Acceptation of their conclusions seems to demand that the position which neurologists have taken in reference to the unity of the neurone be materially modified. These authors, attempting to solve the problems connected with the healing of nerves, seem to have demonstrated that the process of regeneration of peripheral nerves is conditioned by protoplasmic proliferation of the sheath of Schwann, the process being one of karyokinesis from pre-existing cells; and that it is not at all influenced by the ganglion cells from which it has been severed. Bethe, working with puppies and rabbits, has shown that after a peripheral nerve is completely cut across and the distal end wholly degenerated, complete regeneration of the distal or peripheral segment occurs; not only anatomical regenera-

*As Verworn truthfully says, "Contact, anastomoses through fibrillæ or concrescences do not change the neurone theory any more than the intercellular bridges change the cell theory."

tion, but physiological as well, which is, however, more complete in the lower animals. Ballance and Stewart, in their work on the Healing of Nerves, corroborate Bethe in nearly every detail. Bethe has shown further that if the peripheral portion of a nerve which has regenerated, and which has been kept from uniting with the trunk from which it was originally severed, be cut across again, the central end, that is the end which has now no axonal continuity in either direction, does not degenerate. This shows that not only the new axis cylinders develop from preëxisting cells and are in no way outgrowths from axis cylinders in connection with cell-bodies, but it reduces the matter to an admission that a portion of nerve cut off from all connection with the ganglion cell, can, under certain circumstances, take care of itself. This is so revolutionary that we must have very substantial corroboration of it before it can be accepted.

Bethe further maintains that in puppies, at a time when as yet no nerve fibers have appeared in the spinal cord, the locality which the fibers occupy later is indicated by rows of cells which can be followed from the cord to the primitive muscle substance. From this he infers that the first *anlage* of the nerves consists of cells. This multicellular development of the axis cylinder is, as is well known, the claim of Balfour, Beard, Kupfer, Dohrn, Tizzoni, and others. It is entirely irreconcilable with the embryological results of His and of Kölliker, not to mention others of the great number who teach that each axone is the mere outgrowth of a process of a nerve cell. It is no less directly contradictory to the teachings of Huber, Stroede, Vanlair, Harrison and others, that regeneration of the peripheral nerves after division of them is by a process of downgrowth from the axones of the central segment.

In further corroboration of his contention regarding the development of the axis cylinder of the neuraxone, Bethe maintains that when the first fibers are to be seen coming out from the spinal cord one may find contemporaneously primitive nerve fibers in equal or in greater number in the muscle, which speaks in favor of the view that the primitive nerve fi-

bers develop along the whole line at about the same time. With the same distinctness that prolongations of the neuroblasts from the motor roots are seen, one can see remote from the spinal cord the central prolongations of those bipolar cells of the primary *anlage* of the nerves which stream far distant into the cord, and from such pictures he concludes that the peripheral "nerve cells" develop the nerve fibers as far as the ganglion cells. In the main, the experiments of Ballance and Stewart corroborate those of Bethe, particularly in the conviction that the true source of the regenerative process in peripheral nerves is not the cells of the anterior cornua or posterior root ganglion, but the neurilemma cells of the nerve trunk itself. Upon the question of the embryonic origin of the neurilemma cells they are not decided. They believe, however, that the peripheral nervous system is to be regarded as composed of chains of neuroblasts, fused together to form continuous axones enclosed within medullary and neurilemma sheaths. For them the presence of a neurilemma sheath is of fundamental significance, since upon the presence of neurilemma cells depends the possibility of regeneration.

For these investigators the neurone theory is no longer tenable. Bethe has also convinced himself that the theory as accepted at present by the majority must be foresworn. He has suggested that the entire nervous system be conceived of as made up of a large number of cell-societies which are brought into functional interrelationship by means of the neurofibrillæ. One may call such a cell-society a neurone, a ganglion cell being its morphological center of gravity but not its trophic and functional center. A cell-society may be made up of few or of many cells. In addition there would be other cell societies which lack these morphological centers, for instance, the intracentral fibers, the existence of which Bethe seems to be as certain of as is Nissl. Other cell-societies (muscle, gland, reception cells, etc.) are in inner functional and trophic relationship with the nerve cell-societies, this relationship being founded on the fact that the en-

tire animal is an organism, but not the cells which constitute it.

This conception of Bethe seems to me very rational. If it can be maintained that the neurone cell-unit is made up of several cells it will prove a valuable hypothesis. To discuss it, however, would presuppose an acceptance of Nissl's claim that the larger part of the human gray matter is made up of Apáthy's fibrils in a free condition outside of cells, or, as he calls it, a specific nervous substance derived probably from the protoplasm of the nerve cells, which represents the highest stage of differentiation of the cell plasma within the animal body. It does not seem to me that the time is yet ready to pass judgment upon this claim, because the principal evidence for the existence of this substance is theoretical, being based largely on the assumption that the higher the grade of development of an animal the fewer nerve cells inhabit an equally large volume of the cortex, and that in the human cortex it is impossible to account for the whole mass of the gray matter as nerve cells, their processes and neuroglia; for when these are subtracted there remains a very considerable amount of substance not accounted for.

The work of Bethe has only been published in abstract, and final judgment of it must therefore be reserved. The work of Ballance and Stewart, however, has been published in detail, fully and beautifully illustrated. As their conclusions are in accord with a small number of thoroughly accredited investigators, they must be accepted, until such a time, at least, as they are shown to be erroneous by other investigators working with the same method. It is possible that we shall have to modify materially some of the teachings of the neurone doctrine, but so far, I venture to believe, nothing has been discovered with which the neurone doctrine properly conceived cannot be made to harmonize.

In reviewing the field of clinical and pathological neurology I shall confine myself very briefly to some of the most important work. American contributions will not be considered; not because there are not many milestones indicating the progress of neurology in this literature, but because the Chair

does not allow itself the liberty to discuss *ex cathedra* your work.

The most important contribution to the subject of localization of function in the cerebral cortex is the report on the physiology of the cortex of some of the higher apes, by Sherrington and Grunbaum⁵. Their investigations on chimpanzees, orangs and gorillas extend and correct our knowledge of localization. In the main they corroborate the investigations of Bevor and Horsley. In two important particulars, however, they differ; that is, first, that stimulation of the ascending parietal gyrus causes no movement; and second the representation of the movements of the chest and abdomen between those of the hip and shoulder, and those of the neck between those of the face and thumb. Flechsig's⁶ last contribution to the myelogenetic localization of the cerebral cortex, contains no important facts that have not before been set forth. Formerly he distinguished forty myelogenetic areas. This is now reduced to thirty-six. Every area possesses a special anatomical position and therefore a special functional importance. He maintains that the inferior longitudinal fascicle is an important projection system (the real optic radiation) and that the cingulum is likewise a projection system. These have recently been described by Monakow and Dejerine as association systems.

Munk⁷, in a third communication on the extent of the sensory sphere in the cerebral cortex, concludes from critical sifting of the experimental, clinical and pathological material, that neither the cortex of the frontal lobes nor the cortex of the parietal lobes have special localization of the higher psychological functions. Flechsig's teachings relative to the association areas are erroneous he maintains, and there is no special portion of the brain that is uniquely concerned with the psychological functions. In this connection it is interesting to refer to the conclusions of an American surgeon, Charles Phelps⁸, who maintains from a study of brain injury and disease that the left prefrontal lobe is the important seat of the mental faculties.

During the past year there has been much discussion of the reflexes and tendon-jerks. A few new reflexes like the supra-orbital, palmar, scapular and a number of pupillary reflexes have been described. Some of these are awaiting corroboration as to their existence and elicitation, while the final value of others is still to be determined. By far the most important work in this direction, however, has been the corroboration of the statement made by its discoverer that the big toe phenomenon (the so-called Babinski reflex) is a semiological indication of no less importance than the knee-jerk or the ankle-jerk, and that when it is present in typical or genuine fashion, that is, a slow dorsi-flexion of the great toe, depending upon vermicular contraction of the muscles, it is absolutely pathognomonic of degeneration in the cross pyramidal tracts. The existence of the phenomenon in children before they have learned to walk has been of aid in putting interpretation of the physiological basis of the reflexes and in determining the function of the pyramidal tract, which latter point is still awaiting a final and satisfactory conclusion.

Of some practical, but of much more theoretical importance, is the "tibial phenomenon" to which attention has again been called by Strümpell⁹, he having described it first a number of years ago. It consists of dorsi-flexion of the foot, occurring involuntarily and beyond the patient's control when the thigh of a hemiplegic limb is flexed upon the abdomen. When the normal thigh is flexed upon the abdomen, the foot of that side falls into plantar flexion, and continues to droop as the thigh is flexed. In a hemiplegic extremity, or in a leg motorily incapacitated by lesion of a pyramidal tract, the reverse of this takes place. Strümpell points out that the area of the pyramidal tracts in the lower dorsal and lumbar region is not commensurate with the immense amount of peripheral neuraxon matter which goes to these extremities, and infers that the subject of the distribution of the central motor neurones in the cord may be a fruitful subject for study.

An important contribution to the topography of the spinal cord and the oblongata is that of Thiele and Horsley¹⁰, who trace the degenerations in the central nervous system in a

case of fracture dislocation of the spine. They conclude that the fibers of the direct cerebellar tract terminate mostly in the superior vermis; that Gowers' tract is, as Mott has shown, a complex of several systems, spino-cerebellar, spino-quadrigeminal, and spino-thalamic. Other questions of importance relative to the fasciculus spino-quadrigeminalis and the fasciculus spino-thalamicus, whose solution has been facilitated by this work can here only be hinted at.

In the domain of pathology comparatively little work of any great importance has been done. One of our own members¹¹ has published in *Brain* certain changes in the central nervous system which it is maintained constitute parenchymatous systemic degeneration. The change is that of axonal reaction in the cells of Betz and decay of the myelin sheath of some of the corresponding sensory fibers. These cases clinically do not permit of classification, but the alteration has been found to occur in peculiar forms or end stages of depressive disorders, near or after the climacteric, alcoholic, senile and phthisical idiocy, and perhaps also general paralysis. I am pleased to note that Dr. Meyer will demonstrate some specimens of this condition at this meeting.

It has been quite generally believed that many or all nervous diseases now classified as functional will eventually resolve themselves into conditions that are discernible to mechanical and chemical technic. Although this will never be realized there can be no question that many of the diseases which are now classified as functional or dynamic and the result of intoxications or infections, will eventually be so interpreted. Gastric tetany is a condition which is theoretically supposed to be the result of the activity of a toxin generated in the stomach upon the peripheral neuro-muscular apparatus, and Rossolimo¹² has recently found in a case of gastric tetany changes in muscles and nerves characteristic of mild inflammation. The inference is that in the milder cases an autointoxication results which is comparatively transient, but in the severer cases extensive lesions which are protracted in their duration may be the result.

From the time of the publication of the researches of

Achalme¹³, Riva¹⁴, Apert and Triboulet¹⁵, Poynton and Paine¹⁶, showing that rheumatism is an infectious disease depending upon a specific organism, those who believe in the close relationship between chorea and rheumatism have been on the lookout for material that would show the existence in acute chorea of organisms similar to those described by the investigators mentioned above. Preobajensky¹⁷ has recently published a case in which there was found at the autopsy the lesions of hemorrhagic lepto- and pachymeningitis and acute infectious cerebritis all of streptococcus origin. Cultures of streptococci were obtained from the blood and from the brain. The writer remarks that the necessity of differentiating the different forms of infectious chorea exists in order that a rational therapy may be applied. In such a case it would have been an antistreptococcus serum. But we will have to make long strides in hematology before such differentiation can be made.

The pathological anatomy of general paresis is by no means so thoroughly understood as it is commonly believed to be. Some important studies recently made in this disease are those of Shaffer¹⁸, of Budapest, and Storch¹⁹, of Breslau. The former has shown that the disease has an elective affinity for Flechsig's association centers, that is the frontal, parietal, post-central, insular, the second and third temporal gyri, and the gyrus fornicatus. He concludes that his findings support Flechsig's theories, and that the cortical degeneration of paresis is not an irregular diffuse process, but a regular localized elective or selective affection of the cortex. This is in the main corroborative of Storch, who has shown that in atypical cases of general paresis those portions of the brain were affected whose functional allotment is such that disease of them would be presupposed from a consideration of the principal symptoms.

A highly suggestive and intrinsically valuable contribution is by Mott and Halliburton²⁰ on the chemistry of nerve degeneration, in which it is shown that excess of choline, a product of the decomposition of lecithin, occurs in many nervous diseases, whose morbid anatomy consists in degenera-

tion of the nerve substance, such as general paresis and various diseases of the central and peripheral nervous systems.

A disease whose occurrence and causation is quite as mysterious as it was when first described, and the secret of whose existence is wholly concealed, is that known as family periodic paralysis. It is generally supposed by those who have worked at the subject that the disease is due to some form of toxemia. Westphal suggested this idea, and Goldflam elaborated it, and although different observers have suggested that the toxin acts upon different parts of the nervous system, they are all agreed upon the probability that the disease is due to a toxin. Unfortunately no light is thrown upon this subject by the most recent communication (Singer²¹). From a study of the electrical reactions in a patient with this disease, Oddo and Darcourt²² conclude that the seat of the affection is the muscles, and they consider the disease a variety of myopathy, essentially functional in character.

Asthenic bulbar paralysis is another disease in which a toxic substance generated within the system is supposed to be the exciting cause of the attack. Although this subject has received a great deal of attention during the past year, and a few cases have been carefully studied post-mortem, nothing has so far been found that tends to strengthen this theory, or to substantiate the existence of any such poison. Of considerable interest, however, is the existence in the cases published by Laquer²³ and Goldflam²⁴ of malignant disease of the thymus in the case of Laquer, and of the lung in the case of Goldflam. In both instances there were changes in the muscles which were considered to be metastatic from the tumor. That such findings must be looked upon as coincident and not at all to do with the real pathogeny of the disease seems to me incontrovertible. The number of recoveries from this disease is by no means small, which would alone negative such an idea. I have had personally under observation during the past eight years a patient who has been free from any symptoms for more than three years.

It has always been a matter of great doubt with American neurologists that syphilitic polyneuritis exists. Cestan²⁵ has

recorded three cases which he believes establish the occurrence of this condition. Taken in conjunction with what has already been written on this subject by other European writers, it seems to be incumbent upon us to examine into the subject a little more closely.

Ferrier and Turner²⁶ have shown the relatively small functional value of the quadrigeminal bodies in man and in monkeys. Destruction of them causes only transitory symptoms. This is in entire harmony with the present trend of experimental physiology.

The hypophysis cerebri has been the field of much experimental work during the past fifteen years, and especially since its supposed relationship to the development of acromegaly. The conclusions of the different investigators up to the present time have seemed to be quite irreconcilable. During the past year a number of monographs and essays have been published by men whose reputation for reliable investigation has been already established. Casselli²⁷ states that complete abolition of the hypophysis produces in the first place a slowing of the respiration, an acceleration of the pulse, diminution of the psychical function, hypertonia of the muscles, convulsions, progressive cachexia, coma and death. In many respects the symptoms following extirpation of the hypophysis are similar to those of diabetes. The author concludes that this organ is necessary to the human economy, and that it has a specific internal secretion, a modification of which brings about grave alterations in metabolism.

The statements of Casselli are corroborated in great detail by v. Cyon²⁸, who, by the way, seems convinced of the etiological relationship between disturbance of the hypophysis and acromegaly. In contradiction to these investigators is the work of Lomonaco and Van Rymberk²⁹, who make not only a most critical review of the literature, but add the results of their own experiments. They conclude that the hypophysis is a rudimentary organ without general or special functional significance. They maintain that the symptoms which have been described as following extirpation of the

gland are due either to injury to structures adjacent to the pituitary, or the result of shock or infection.

Friedmann and Mass⁸⁰, who performed the operation of extirpation of the hypophysis in 18 cats, reached practically the same conclusion. The status of the function of the pituitary gland may, therefore, be said not to have materially changed during the past year.

The morbid anatomy of exophthalmic goiter remains as obscure as ever, although no end of research work and anatomical investigation is being done to solve the problem. Recently Kedzior and Zanietowski⁸¹ have published a preliminary communication which sets forth some findings in a case of this disease of four years' duration. Death was due to an intercurrent attack of croupous pneumonia. In the nervous system the following changes were found: Fresh and ancient hemorrhages throughout the entire oblongata especially in the vicinity of the left olive, with distension of the blood vessels. The left restiform body was much smaller than the right. On microscopic examination the degeneration of this restiform body was evidenced by its waxy appearance in contradistinction with the deep red of its fellow of the opposite side. The authors incline to the belief that this change may be taken as the basis of the disease in this instance, though in just what way it caused the symptoms does not seem clear. The recoverability of exophthalmic goiter is the best argument that no such change as that described by these writers is responsible for more than its accidental occurrence. The hyperplasia of the thymus which was found by these writers has also been remarked by a number of others, including Dinkler⁸².

The findings in the central nervous system of disease of many years' standing, such as paralysis agitans, are not usually looked upon as being of any value whatsoever indicative of the morbid anatomy of the disease. It is generally recognized that they may more legitimately be the result of the paralysis agitans than the cause. Therefore, the contribution of Walbaum⁸³ is of no service in interpreting the disease, a conclusion arrived at by the author.

The occurrence of the optic neuritis in lesions of the spinal cord has been studied by Taylor and Collier³⁴, and their conclusions may be regarded as a real contribution to semiology, corroborating as they do the observations of our own distinguished and lamented members, Seguin and Eskridge.

From an analysis of twelve cases, they conclude that optic neuritis of all degrees of severity may occur in connection with tumor, compression, myelitis, or hemorrhage affecting in some degree the upper part of the spinal cord.

The therapeutic value of electricity is a subject upon which neurologists differ quite as much in all probability as almost any subject that can easily be mentioned. The chief reason for this is that trustworthy data are not at hand to guide us in putting an estimate upon its value, and not all of us have the time and application to make such data for ourselves. What is needed is reliable experimental work such as that which gave electro-diagnostics a solid foundation. As an indication of work in the right direction I take this opportunity of mentioning an article by Jellinek³⁵ in which the changes in the tissues, principally the nervous system, produced by electricity, are set forth.

We may count that year barren in therapeutic suggestion that does not witness a new cure for exophthalmic goiter, but whether the prognosis of the affection is materially altered thereby is doubtful. Abadie and Collon³⁶ give their results with the intrathyroid injection of iodoform and ether, one part of the former to five of the latter. One cubic centimeter of this solution is injected into the thyroid gland. The method was introduced by Pitres, who claimed satisfactory results from it, and the investigators just quoted claim to have had equally gratifying experiences, claiming twelve cures out of twenty-four cases. It must, however, be said that the cure of a case of exophthalmic goiter has no particular significance. We must know what sort of a case it is, meaning thereby that some cases are cured by anything, while others withstand everything.

It is a matter of disappointment that the Roentgen rays have not been of particular service to the neurologist in his struggle with disease, either in their diagnosis or their cure.

But recently it has been shown by one of our own members, Mills, in conjunction with Pfahler³⁷, that it is possible that they may be of service in the recognition or corroborative recognition of some tumors of the brain.

Amongst the most important clinical contributions of the year is one from England.

Dr. Henry Head³⁸ a few years ago while still a hospital interne instituted and carried out an investigation on the relationship of disease of the internal organs to superficial pain radiating around the surface of the body, and the tenderness of its superficial covering, that put him at once into the first rank of neurologists and established his right to be heard attentively in any claim that he might put forth. In the Gulstonian Lectures for 1901 he has attempted to show how far the intrusion of stimuli arising from disorder of the viscera upon the nervous system are accompanied by changes in consciousness; in other words, the changes in consciousness associated with the reflected pains of visceral disease. His explanation of these changes in consciousness, that is, of hallucinations, moods, suspicions, and changes in memory and attention, is simple: Under normal circumstances visceral life takes place outside consciousness; the visceral field is pushed out of consciousness and its records remain only as latent dispositions. A complete change takes place when the reflected pain of visceral organs comes into existence. They crowd into consciousness, usurping the central field of attention. It brings in its train all those images and dispositions which exist normally at the fringe of, or entirely outside of, the field of consciousness. The barrier which the normal mind sets between conscious life and that of the viscera is broken down. The importance that this study has in the interpretation of such diseases as hysteria, neurasthenia, and some other of the so-called functional nervous diseases, as well as the relationship which exists between diseases of the viscera and certain mental disorders, including hypochondria, is so great that the subject should be pursued by every neurologist to whom the opportunity is offered.

From this brief and cursory reference to some of the

most important contributions of the year it is seen that there has been more than usual activity in the realm of neurology, and although no contribution that can be regarded as epoch-making has been made during that time, the charge that neurologists have become sterile and their fields of labor have gone to seed can scarcely be maintained. Questions of the vastest import in every department of neurology are awaiting solution, and the stimulus which one receives from meetings such as this furnish the impulse and renews the strength whereby we are enabled to lift fold by fold the veil from before the face of Isis, in whose lineaments we may then discover an expression of those revelations of the Book of Wisdom which we are able barely to guess at today.

Before declaring this meeting open for the transaction of scientific business I wish to thank you for the honor that you have conferred upon me in placing me in the Chair, and to bespeak your aid and coöperation in making this meeting as successful as it bids fair to be.

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CONTRIBUTION TO THE STUDY OF THE MYOSPASMS: MY-
OKYMIA, MYOCLONUS MULTIPLEX, MYOTONIA
ACQUISITA, INTENTION SPASM.*

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There is much confusion in the classification of the various anomalies of the neuro-muscular mechanism which give rise to involuntary spasmodic movements. In a recent text-book the term myoclonia, for example, is made to include Friedreich's myoclonus multiplex, Bergeron's electric chorea, and the fibrillary chorea of Morvan, the description of the symptoms of myoclonia attempting to cover all three conditions. Again, a recent contribution describes, under the title hysterical myoclonia, a single case said to present tremor, atasia-abasia, simple chorea, fibrillary chorea and electric chorea. In other text-books myoclonia is made synonymous with myoclonus-multiplex, while still other authors do not use the word at all.

In calling attention to the persistent muscular quivering to which Schultze gave the name myokamia (from the Greek word meaning a wave), I do not propose to enter upon the general question of classification further than to clear the ground somewhat by assuming that we need not burden our minds with the effort to draw analogies between this disorder and the electric chorea of Dubini, to convulsive tic, or even to the fibrillary chorea of Morvan. Dubini's disease is infectious, endemic, and generally fatal; convulsive tic is generally unilateral, generally facial, and has little in common with the persistent fibrillary twitching under consideration, and the fibrillary chorea of Morvan is an acute disease of childhood accompanied by constitutional symptoms, in one case even by delirium, and in one case followed by death. It may appear somewhat radical, perhaps, to insist upon the absolute separation of myokymia from the myoclonus of Friedreich, to which disease its resemblance was thought by Kny to justify the name myoclonus fibrillaris

*Read before the American Neurological Association, June, 1902.

multiplex, or from the electric chorea of Bergeron. But there is little to suggest clonic spasm in this general quivering of muscular fibers, certainly little to suggest the variety of contraction characteristic of Friedreich's myoclonus, although it is unfortunately true that the description of this disease includes occasional fibrillary twitching. The characteristic feature of the *myoclonus multiplex* consists in more or less symmetrical clonic spasm affecting the whole or greater part of the muscles involved, the muscles of the trunk and the large muscles of the extremities being most affected. Gowers², in discussing the various types included by different authors under the head of myoclonus multiplex, has expressed a justifiable doubt "whether any should be placed together that do not present the common features of the sudden shock-like character of the muscular contractions, their bilateral symmetry, and the comparative freedom of the extremities."

Unless, therefore, further analogy is established between myokymia and myoclonus multiplex, it seems reasonable to regard myokymia as a separate disorder.

The persistent muscular quivering to which I would call attention (best named, perhaps, myokymia), a phenomenon most frequently observed in the adult male, though a troublesome disorder, is of no grave import, as far as can be judged from recorded cases. It may run a comparatively short course and terminate in recovery, or it may persist for years without appreciable effect upon the nutrition or the usefulness of the affected muscles. It does not involve the entire muscle at any given time, but affects group after group of fibers, most commonly in the muscles of the calf and thigh, especially the glutei, less often in the shoulder muscles, and still less often in the small muscles of the hand, and those of the trunk and face.

The electrical irritability is sometimes increased to both currents; tetanus may be produced by a moderate current, and persist after removal of the electrode.

The symptom may follow lead poisoning (Buber, Karcher), or poliomyelitis (Williamson), either directly, or after an interval, and in this event its spread is apt to be among the muscles not involved in the original paralysis. It is prone to appear

during attacks of sciatica, and to persist long after the pain has passed away (Gowers, Hoffman, Bernhardt). Kny attributed it in one case to exposure and overwork, in the other to a blow in the groin. Its temporary appearance is not uncommon in health, and the fact that it may persist for a number of years without other sign of central or peripheral disease, past or present, is shown by the second of the personal cases I have to communicate.

The practical bearing of this study lies in the prognosis, which is apparently in marked contrast to that of the fibrillary twitching of progressive muscular atrophy, which it closely resembles.

Case I.—A professional man of thirty had an attack of poliomyelitis in infancy, which left the peroneal muscles and tibialis anticus permanently affected on the left side; there is a difference in measurement of about one inch in the thighs, but no local atrophy and no paralysis in this region. About six years ago he commenced to notice fibrillary twitching in the unaffected muscles of the paralyzed leg, especially in the calf muscles, which were first affected. The twitching gradually extended to the front of the thigh, and in the course of three years to the back of the thigh, particularly to the glutei. In the course of about two years the interosseus of the left index finger was attacked by fibrillary quivering. About three years ago the right calf muscles became affected, after which time quivering appeared occasionally in the muscles of the right thigh. During the past two years the intercostal and shoulder muscles have been included. There is no involvement of the face or neck.

The quivering affects for the most part only small bundles of fibers, spreading itself irregularly, sometimes passing from bundle to bundle, again, various bundles quivering at once. He is perfectly aware of the twitching through his sensation, but there is no pain. Occasionally the twitching will involve enough of the muscle to produce a movement, as of the finger or foot. The phenomenon appears while the limbs are in a state of relaxation, and is not increased by movement. It is practically constant.

There is no wasting, and the relative measurements of the legs remain the same. There is no weakness, no loss of voluntary motion, and no interference with the fine movements of the fingers as writing or handling an instrument; he is perhaps rather easily tired but no more so than can be explained by his work. There is no increased sweating, no palpitation, no dis-

turbance of sleep, digestion, or other function, the heart and lungs are normal, also the urine. He is a man of high intellectual endowment, and of somewhat neuropathic tendency.

The knee-jerk on the right side is normal, and extremely difficult to elicit on the left when the patient is tired. This diminution of reflex of the left side is of long standing and probably represents a remnant of the poliomyelitis. There is no ankle-clonus. The posterior tibial artery and the dorsalis pedis pulsate normally on both sides. He is not subject to painful cramps. This is mentioned in view of the fibrillary twitching sometimes found in intermittent claudication.

This case seems to belong to the same class with that of Williamson (which also followed poliomyelitis after a considerable interval), in that the twitching is painless, and in that it follows a definite affection of the anterior horn cells. Certain of the cases occurring after lead poisoning should perhaps be included in the same category; in the case of Buber, for example, the fibrillary twitching was painless (except occasionally at the height of an unusually extensive spasm), and it was neither identical in time nor in distribution with the paralysis; the twitching lingered long after the paralysis had practically disappeared, and was most marked in the muscles unaffected by the original process. The case of Hoffman (following sciatica), should perhaps be included in the same class, in that the fibrillary twitching persisted during the intervals of the attacks of pain. The picture in Hoffman's case is somewhat complicated by the attacks of bilateral pain in the sciatic distribution, and the doubt as to the seat and nature of the pathological process causing them, but it is significant that the quivering persisted twenty years without definite muscular alteration, the patient dying of cancer of the stomach.

The case of Karcher, in which quivering accompanied lead poisoning, is similar in every respect to that of Buber, excepting with regard to the acuteness of the attack, and it may fairly, perhaps, be classed as a milder and less lasting form of the same affection.

The case of Biancone (classed by him as mild polyneuritis) seems very similar to that of Karcher, except that the nature of the poison or infection was not apparent. The case of Mayer may possibly be included in the same group, but in the pres-

ence of spastic paralysis and in the absence of history of either recovery or of long-standing atrophy or other disturbance, its classification is somewhat questionable.

In these cases there is nothing to suggest a reflex phenomenon, and the history points so definitely to the lower motor neurone as to throw the burden of the proof upon any other seat for the disturbance. The questions (a) what portion of the motor mechanism is disturbed, and (b) what is the nature of the disturbance, are not so easy to answer and will, perhaps, never be satisfactorily answered. The prevailing view regarding the unity of the neurone as a sufferer from toxic or infectious process relieves us of the duty of deciding whether the anterior nerve cell, or the nerve fiber, is the sufferer from such process, for both are doubtless affected, if either. It is less easy to decide whether the muscular mechanism is itself affected. The discussion of this point would involve considerations too speculative to detain us.

With regard to the *nature* of the disturbance we are again in doubt as to whether the process represents an increased irritability or a decreased innervation. We have not sufficient data to justify us in discussing this question at present, and we can do little more than classify and study these cases with a view to establishing at least a prognosis for our guidance. A single suggestion bearing on this question may not be out of place.

It seems to have been assumed by those discussing these cases that we have necessarily to do with an *irritative* phenomenon, whether of direct or of reflex stimulation, but is it not equally plausible that we have to do with something in the nature of a more or less rythmical lapse from tonicity; or again, that the quivering represents something analogous to increased mechanical irritability, or to certain stages of the degenerative reaction to galvanism, namely a phenomenon resulting from a quality inherent in muscle fiber and released to a greater or less degree when the muscle is freed from the controlling influence of the cerebro-spinal axis? Viewed in this light, the comparative innocuousness and even the disappearance of the quivering would not be surprising, for neither increased mechanical irritability, nor the first stages of the degenerative elec-

trical reaction, are necessarily of grave import, though they *may* be followed by loss of function, just as fibrillary twitching may be, and generally is, followed by muscular atrophy and paralysis. It might be objected that the fibrillary quivering has no obvious stimulus for its production, and that it takes place while the muscles are at rest. We have no right, however, to assume from this that the quivering is spontaneous, for a mere change of position or of tension, a slight stretching or shortening of the muscle may well suffice to start the quivering in such anomalous muscular tissues as those under consideration.

A discussion of this subject with my friend, Mr. John Stone Stone, the electrical expert, with a view to finding an analogy in that branch of science, gave rise to the suggestion on his part that we may have to do with a defective contact between the nerve ending and the muscle fiber, a condition known in electrical parlance as a "loose joint." This suggestion, like the theory of Duval, regarding the contact between the end brush and the nerve cell, will receive scant attention from those who find no fascination, and no reason, in the attempt to establish an analogy, if not an identity, between the electrical and the neural current, a search to be by no means hastily abandoned, however, either on account of general scepticism or even on account of apparently antagonistic findings.

The following case seems, at first thought at least, to fall into a somewhat different class from those previously considered.

Case II.—R. K., forty-eight years of age, single, a paper-maker, has noticed for three years a tendency to quivering of various muscles. The onset was gradual, but the quivering soon became almost constant, and spread from the muscles of the legs and thighs to those of the forehead, the shoulder region and the lower face, all of which groups now show the characteristic fibrillary twitching with varying constancy, the gastrocnemii with absolute constancy. No pain accompanies the symptom, excepting that the patient is subject to frequent extremely painful cramps. The quivering tends to increase in movements, and shows marked increase after physical exertion. He tends to become, after walking, much more weary than he formerly did. He notices no other change in his general condition. There has been no wasting of muscles, no loss of power in any muscle or group of muscles, and no tenderness.

He has gained weight. He denies specific history; his family history as well as his previous personal history is uneventful. His parents died in advanced life, and neither had nervous or mental disease, or special neuropathic tendency. He is perhaps rather easily startled of late. He drinks two cups of coffee in the morning and drinks tea twice a day. He is subject to extremely painful cramps, generally in the thigh, occurring both by day and by night, and started by movement of the leg. The attacks last a few moments only, but may recur many times in the night. These attacks are of interest in connection with the fact that fibrillary twitching has been noted among the symptoms of claudication, or, as Dr. Paul and myself have ventured to name it, *angina cruris*.

Physical Examination.—There is continuous play of fibrillary twitching over the muscles of the calves, especially marked on the right; there is also quivering of bundles of fibers in the muscles of the forearm and of the shoulder group, in the chin and lip, in fact, in nearly every part of the body. The contraction has never been sufficiently extensive during my observation of the case to cause a definite movement as of a finger or toe, though he had one severe and painful cramp in the left thigh in my presence suggestive of the spasm of *angina cruris*. The patient is able to make all single movements, and combined movements, perfectly. The muscles of the extremities were carefully tested separately and all showed good strength. The grasps are strong, the patient can stand on his heels and toes with perfect facility, can stand with the feet together, and the eyes closed, without swaying, can ascend and descend stairs, or mount a chair with either foot with normal agility, strength and accuracy. There is no wasting of individual muscle or group of muscles; the right calf measures 14, the left $13\frac{3}{4}$ in. All forms of sensation are normal. The pupils are alike, well-rounded and of normal reaction to light and accommodation. The knee-jerks are normal and alike. The plantar reflex consists of slight flexion of all toes (normal); there is no Babinski and no clonus. The mechanical irritability in the calf muscles is increased, but tapping the muscle does not produce lasting tonic contraction.

Electrical reaction.—The application of the moderate faradic current to the muscles of the calf produces a slow tetanic contraction of the underlying bundle, persisting after removal of the electrode.* The vastus internus on the contrary, a muscle rarely the seat of twitching, reacts promptly to

*This phenomenon suggests an analogy to myotonia acquisita, but the resemblance is not sufficient to justify its classification under this head.

the faradic current with the brief and active contraction of the healthy muscle. The galvanic current presents less marked abnormality. The gastrocnemius, like the vastus internus, does not react to the direct application of this current until a strength of 10 m.a. is reached. This strength of current produces a reaction to the kathode closure slower, and more wavelike in the gastrocnemius. It was also noted that the anode closure, which caused in the vastus internus marked contraction, though less than that produced by the kathode closure, found no response in the gastrocnemius. The pulsation in all the arteries of the lower extremity is normal except in the dorsalis pedis on the right side, where it is only faintly perceptible.

In this case nothing points to affection of the anterior horn cells, either past or present. In the two cases of Kny this was also true, and he regarded the entire disturbance as functional, allied to the "Schreckneurose" of Friedreich. The rapid cure in his case lent weight to this supposition. But in our case the quivering has remained constant and unchanged for three years; other signs of neurasthenia are wanting, and it seems doubtful if we are justified in lightly turning the case off as functional, except indeed in the sense that it represents a disturbance of function of unknown pathology. It certainly seems hardly fair to class these cases under the neuroses. In the first place, fibrillary twitching, while more common in persons of neuropathic tendency, does not represent a disordered cerebral function, it is of comparatively rare occurrence in the hordes of hysterical and neurasthenic patients coming to the neurological clinics, but is of common occurrence in the well-known type of chronic anterior horn cell disease known as progressive muscular atrophy.

Is it not possible, then, that our case II and the two cases of Kny, represent a disordered function of the lower neurone allied to that established by the remains of poliomyelitis, or more acutely by the effects of lead upon this neurone but produced perhaps by faulty arterial equipment. The fact that during the progress of certain of these cases increased mechanical irritability and slight increase of direct muscular irritability to both forms of electrical current has appeared, tends to favor this hypothesis, and I do not see how we can avoid the

suspicion, at least, that we have in the quivering of myokymia a symptom analogous to, though of less grave import than the fibrillary twitching of progressive muscular atrophy. When the pathogeny of the latter phenomenon is established, we probably shall not have far to look for that of the former.

To accentuate the fundamental difference in character and distribution of the spasms seen in paramyoclonus multiplex, I append the essential points of a fairly typical case of this disease recently seen in consultation with Dr. Dow, of Lawrence.

Case III.—A married lady, twenty-four years of age, has been subject to widespread clonic spasm for eight years. The movements began in the thighs and gradually involved the trunk muscles, particularly those of the abdominal and scapular regions. Later the occipito-frontalis became involved. The muscles of the neck have shared at times, causing backward movements of the head. The family history is negative as regards this and other form of nervous disease. As a girl she was rather delicate, but not hysterical. There has been no wasting of muscles, her general strength is good, and the movements interpose no physical bar to her usual duties and pleasures. Her general health, digestion, sleep and other functions are unimpaired.

Examination shows bilateral, almost symmetrical, clonic movements. The contractions of the quadriceps femoris, for example, are practically continuous, recurring with a frequency of about eighty per minute, varying somewhat in rhythm and in force, but always affecting the whole muscle. The movements can be plainly felt in the long tendon of the quadriceps femoris by the hand even outside the clothing. The abdomen presents almost constant alternating contraction and relaxation of muscles. The oblique muscles seem chiefly involved, and the movements produced are of a peculiar twisting character, not bending the body but moving the abdominal walls. The scapulae are drawn inwards and rotated upon themselves, the lower angles approaching each other while the upper angles are elevated. The result is a sort of shrugging movement of the shoulders. The occipito-frontalis is alternately contracted and relaxed, causing movement of the scalp. The movements of the occipito-frontalis, of the scapulae, and of the abdominal muscles are less rapid than those of the quadriceps femoris. *The muscles of the hands and arms as well as those of the legs below the knee show no sign of spasm. No trace of fibrillary twitching is visible during prolonged observation.* The mechanical irritability is not increased.

Examination is otherwise negative. The patient is rather delicately built, but is of good muscular development and exhibits no appearance of general nervousness. She is well poised, well controlled. The knee-jerk is normal, neither lively nor disagreeable. There is no anesthesia, no sensitive point, and no other hysterical stigma.

This variety of spasm offers no suggestion of muscular freedom from central control, but suggests rather imperfect action of the central mechanism itself. It would certainly seem that attempts to class the quivering of myokymia with movements of this character and distribution will hinder, rather than advance, our study of these neurological anomalies.

The contrast between myokymia and paramyoclonus is shown, again, in a case of the latter disease recently seen in consultation with Dr. Minot.

Case IV.—A young lady of rather slender build, with tubercular process of the apices, for several months has been subject to twitching of certain muscles, increased by excitement. Inspection shows the more or less rhythmical clonic movements to be bilateral and symmetrical, and to affect only muscles attached to the trunk. The movements are most marked in the sterno-cleido-mastoids, both of which contract together producing a slight forward movement of the head without rotation or lateral inclination. The movements are painless. Each spasmodic contraction is followed by complete relaxation; no tendency to tonic spasm appears, and no tendency to prolongation of the malposition. The patient reports a previous attack of similar nature lasting several months, in which attack the abdominal muscles were affected, and apparently the diaphragm, judging from her description of a rhythmical noise resembling hiccough. No stigmata of hysteria were found and no history of hysterical tendency elicited.

Such a case may be readily mistaken for a bilateral form of the ordinary spasmodic torticollis, and in estimating the chances of recovery without operation from that affection, cases of this nature should be excluded, for whatever the pathogeny of paramyoclonus it certainly differs fundamentally from spasmodic torticollis in clinical history, course and prognosis. I myself have reported under torticollis a case of so-called retrocollis with comparatively rapid recovery under massage and

general measures, and I am free to acknowledge that paramyoclonus was not even considered in the diagnosis.

II. Myotonia Acquisita; Intention Spasm.

With the peculiar congenial anomaly known as Thomsen's disease we are familiar, though it may not have fallen to our lot to personally observe many cases.

The characteristic picture of this disorder consists in a congenital tendency for the muscles to fall into a state of tonic contraction upon voluntary effort. The tendency gradually wears away when the effort is continued, so that the patient walks, for example, as well as a healthy individual after he has awkwardly dragged himself a short distance. The characteristic electrical reaction consists in persistent tetanus on faradic or galvanic stimulation, in the equality of kathode with anode closure, in irregular waves of contraction on application of the faradic, and rhythmical waves of contraction on application of the galvanic current. Mechanical irritability is increased, and the stroke of the hammer produces tetanus. A few cases have been reported in which a disorder similar as regards voluntary movement, and identical as regards electrical reaction has first appeared in adult life without hereditary predisposition, and an intermediate condition is recorded (Martius and Hanse-mann) in which the disturbance was congenital, but of intermittent appearance.

Here, again, obviously distinct cases have been classed together. Talma, for example, who first used the term myotonia acquisita, in an article proving that the myotonic reaction was not pathognomonic of Thomsen's disease, grouped together five cases, in only two of which the peculiar tonic tendency occurred independently of infectious nervous or of intestinal disorder.

In the second of Talma's cases, the muscular disorder followed influenza, was accompanied by pain, by tenderness of spine and of nerve trunks, and was temporary. In his fourth and fifth cases the tonic spasm, though increased by movement, was continuous, was ushered in by acute and violent intestinal disturbance with hepatitis, and disappeared upon the subsidence of these conditions. These two cases, therefore, bear more resemblance to tetany than to either myotonia or intention spasm.

The case of Fürstner, ushered in and accompanied by mental depression, persistent whistling respiration, vaso-motor disorders, *continued rigidity* independent of voluntary movement, showed no mechanical or electrical change, and was benefited by suggestive therapeutics. Fürstner had obviously, then, to do with a psychopathic, not a myopathic disturbance, and if the name myotonia acquisita were allowed to cover both his case and all of Talma's five cases, its application would be indeed a broad one.

Jacoby in a critical review of this subject calls attention to two essentials of myotonia, whether congenital or acquired, namely, the myotonic motor disorder, and the myotonic reaction. He reports two cases which conform to these requirements. For the simple tendency of tonic spasm accompanying or following movement, he chooses the term *intention spasm* (Seeligmüller), and reports one such case. This classification seems reasonable, but is perhaps a little too sweeping, inasmuch as it would exclude from the myotonias such cases as that of Martius and Hansemann, in which the myotonic electrical reactions were present, but the motor disorder was not that characteristic of Thomsen's disease, for the spasm did not lessen on continued effort. The following case is offered as a remarkably persistent example of *intention spasm*, accompanying diabetes mellitus.

Case V.—F. A., a patient of Dr. Phippen, of Salem, was sent by him to the Massachusetts General Hospital for consultation, and was seen in the Neurological Department, Aug. 22, 1901. He is forty-nine years of age, single, American, a confectioner. Five years ago he noticed that on walking the muscles of the leg and thigh became rigid. No fright, exposure, overwork or other exciting cause was recognized. No cramp was noticed except while walking. There was no intestinal disorder. At times he would have a feeling that if he brought his foot down squarely he would be thrown in the air, and he avoided making this movement. There has been no pain connected with the spasm though he has had occasionally a dull pain in the lumbar region. Cold does not precipitate the difficulty. The tendency to stiffness on walking gradually increased during a year, since which time it has remained stationary.

The family history, as well as the previous personal history, is negative. His father died at 67 of some throat trouble, his

mother at 37 from acute pulmonary disease. During the summer he lost twenty pounds in weight. There has been no disturbance of general health, no digestive disorder, headache, pain, tenderness or disturbance of special senses. He is not subject to cramps. There has been no shortness of breath, no swelling of feet, nor disorder of bladder or rectum. There has been no mental or physical irritability or morbid tendency, aside from the affection of gait. On one occasion he was able to run a short distance without trouble. Otherwise the condition has been unchanged.

Physical Examination.—The patient walks stiffly with a somewhat waddling gait, moderately spastic, not ataxic. The muscles of the thigh and calf, normal and soft while he occupies a sitting posture, are thrown at once into a condition of tonic contraction on the attempt to rise, and this contraction persists so long as he continues standing or walking. The tendency does not lessen on his persisting in the endeavor to walk, but remains constant throughout. He ascends better than descends stairs. He walks backward rather less stiffly than forward.

The knee-jerk is normal, rather active, alike on the two sides and not wearying on continued tapping. There is no loss of any form of sensation. The muscle and temperature senses were tested with special care, and found intact. The plantar reflex is normal (flexion); there is no Babinski. There is no clonus. There is no atrophy, no loss of motion in any muscle or group of muscles, other than the impediment interposed by the contraction. He can stand on toes and heels, and in sitting can raise toes naturally with heels on the ground. He can stand on either leg without swaying. There is no incoördination of movement in arms or legs. He has great difficulty in stooping. The muscles are of good size, but nothing in their appearance suggests hypertrophy. The left thigh measures $14\frac{1}{2}$ inches, the right $14\frac{3}{8}$ inches, in the smallest part. The muscles of the thigh are well rounded and of normal appearance, those of the calf are well developed, but not distinctly hypertrophied; the calves measure each $14\frac{1}{4}$ inches. There is no increased mechanical irritability of any muscles of the leg, and no change in electrical reaction, unless, perhaps, the reaction to the faradic current is rather slow in the gastrocnemius, not sufficiently so, however, to suggest tonus.

The urine, which was found normal at the last examination (1 year ago), at this examination contains sugar. The specific gravity is 1024, the reaction acid, there is no albumin. Further examination of the urine has shown that the presence of sugar is constant, though without constitutional signs of diabetes.

The symptoms in this case differ from those of myotonia* in that the tendency to tonic contraction does not wear away upon continued use of the parts, and in the absence of the myotonic electrical reaction. Inflammatory and degenerative disease of the nervous system, peripheral or central, is eliminated by the absence, during five years, of constitutional symptoms, the absence of disordered reflexes, nutrition, sensation, vaso-motor or secretory mechanism, as well as lack of tenderness, of pain, of pupillary change, and of motor disorder, other than the impediment offered by the tonic contraction. We have obviously to do with a non-inflammatory, non-degenerative and non-infectious muscular affection without known organic basis. Nor are we justified in classing the case as hysteria or neurasthenia, excepting as we may choose these designations to cover all nervous disorders without recognizable organic basis, in which case we are no nearer to understanding the phenomenon than if we had not named it at all. No attempt has been made to solve these cases, and no basis has been suggested, beyond that of increased irritability, which really means nothing. Here again the study offers at present little satisfaction beyond the establishment of the prognosis, which is apparently good, as regards life and general health, unless other disorder is present. It is too soon to establish a prognosis as regards the disappearance of the symptoms. Jacoby's case apparently recovered in less than a year. It is to be hoped that all similar cases will be reported, that we may have reliable data upon the question of the course and ultimate result of the malady.

To revert to the analogy between the neural and the electric force, it may not be without the realm of plausibility to suggest that if such analogy is ever established it may appear that the symptom under consideration is due to something akin to the residuary magnetism of which we have a practical

*Myotonia appears to have been used also in the collective sense. Hochsinger describes as myotonia of infancy the persistent hypertonicity of the flexors, and diagnosticates it from tetany, but if myotonia is used as an inclusive term it is a question if it should not cover tetany itself, while if it is used in the narrow sense it has been preempted by Thomson's disease. Such considerations render it advisable to avoid using myotonia as well as myoclonia as generic terms, substituting, perhaps, the word *myospasm*, clonic and tonic (a suggestion for which I am indebted to Dr. Courtney).

demonstration in the occasional tendency for the vibrator of the faradic apparatus to remain glued to the electro-magnet.

In conclusion, it seems pertinent to make the following suggestions:

(1) The term *myoclonia*, as a collective designation for the unrelated disorders, should be discontinued.

(2) The term *myokymia* should be limited to cases showing, without hereditary or congenital history, widespread muscular quivering, without atrophy or other indication of progressive degeneration of the nervous system, without constitutional symptoms, and without sign of present infectious or other acute disease. Cases should not be excluded, however, on account of preceding or introductory symptoms pointing to disease of the lower neurones, if such disease has either disappeared or come to a standstill.

(3) The term *myoclonus fibrillaris multiplex* should not be applied to such cases, since it suggests a relationship between myokymia and the paramyoclonus multiplex of Friedreich, with which it has nothing in common.

(4) *Myoclonus multiplex* (the prefix *para* seems superfluous), should be used to designate bilateral clonic spasms involving whole muscles or groups of muscles, generally those attached partly or entirely to the trunk.

(5) The term *myotonia acquisita* should be limited to non-hereditary and non-congenital cases in which otherwise healthy individuals present the typical motor disorder or the typical reactions of Thomsen's disease. This term should not include the rigidity accompanying marked intestinal disorder or pronounced psychopathic states, even though the rigidity in the latter conditions may be increased by voluntary movement.

(6) The tendency to spasm on attempted voluntary movement, unless accompanied by the typical motor disorder, or the typical reactions of Thomsen's disease, should be classed as *inattention spasm*.

(7) The term *myospasm*, clonic or tonic, may be used instead of myoclonia and myotonia, when it is desirable to include under one head the various forms of involuntary muscular contraction without known organic basis.

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UNUSUAL CHOREIFORM ALTERATIONS IN THE WIDTH OF
THE PALPEBRAL FISSURE OF BOTH EYES, OCCA-
SIONED BY SPASM OF THE LEVATOR
PALPEBRAE MUSCLES.*

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In October last, O. W., a colored boy, eight years of age, was brought to my service at the Howard Hospital, on account of a curious tendency to raise his upper lids. His mother attributed these movements to an accident which he had received during the summer months, in which the back of his head had been run over by a wagon, for she said that prior to this the boy had never been troubled with his eyes nor had she noticed anything unusual about them. At the time of examination he complained somewhat of headache but especially of a feeling of sand in his eyes.

The movements of the eyelids were very curious and striking, owing to the alterations in the width of the palpebral fissure which they occasioned and the amount of sclera which became exposed, the negro skin contrasting vividly with the pearly white of the sclera. The contractions were clonic and rhythmical, the fissures widening about fifteen to twenty times in the minute; they were entirely under the control of the will, the patient being able to initiate them or to cause them to cease when commanded to do so. The excursions of both eyes were normal; there was no nystagmus; vision and accommodation were normal; both eyes were moderately hypermetropic.

It was easily apparent that the widening of the fissure was occasioned by a contraction of the levators of the lids, and that this was accomplished without the assistance of the frontalis, the eyebrows remaining perfectly quiescent: it was further patent that the movements had no connection with the act of winking, as the contraction of the orbicularis occurred in the

*Read before the Ophthalmological Section of the College of Physicians of Philadelphia, April 15, 1902.

usual way, entirely independent of the widening of the fissure. The question then arose, which part of the levator was acting, the bulk of the muscle, that controlled by the third nerve, or the smaller portion, consisting of unstriated fibers, which is innervated by the sympathetic. It seemed probable that it was the contraction of the former that occasioned the widening, for it was thought that if it were due to a spasm of the muscle of Müller, changes in the size of the pupil, the iris being likewise under the control of the sympathetic, would probably have been observed also, whereas the pupils, which were 3 mm. in size, remained unchanged during the dilatation movements. It is of interest to note in this connection that the Graefe lid sign was absent and that there was no exophthalmos.

The pathogenesis of the affection was assumed to be choreiform, the contraction of the levator replacing the contraction of the orbicularis, which is so common a manifestation of habit chorea. As is so often the case in chorea of the lids, there were no associated twitchings in the muscles of the face, neck or elsewhere. Spasm of the levator is a very rare affection, and notwithstanding the many and bizarre forms of tremor and spasm of ocular and associated muscles of the face and neck which have been recorded in chorea, its occurrence in connection with this disease has not been remarked before. An instance of primary tonic cramp in an insane patient has been recorded by Pick, in which the Graefe lid sign was present, although there were no signs of exophthalmic goiter: in most of the recorded cases of spasm of this muscle, however, there have been other associated ocular conditions. Thus Wilbrand and Saenger in their recent and comprehensive work upon the neurology of the eye, mention in this connection cases of Salzmann and Rampoldi, where there were rhythmical changes in the width of the palpebral fissure synchronous with pupillary contraction. The same authors report cases seen by Hutchinson and Gooding where the spasm of the levator was induced reflexly by diseased teeth. Finally, they give the notes of a series of cases where the spasm was probably due to irritation of the nuclear region of the oculomotor, being associated with paresis of groups of muscles supplied by this center.

Although under ordinary conditions the action of the levator in raising the lid is inseparable from a contraction of the frontalis, it is possible by practise to innervate the levator alone, and to widen the fissure without bringing the frontalis into play. I have seen this isolated action of the levator, though but to a slight degree, in several patients with chronic conjunctival irritation, where the movements of the lid seemed to bring momentary relief to the local sensations, and I have repeatedly noticed the fissures widen independent of any action of the frontalis when patients fixed the finger in the cover test at the near point; the widening in the latter instance being attributable to an associated stimulation of both internal rectus and levator muscles.

The course and conduct of the case were simple, the movements in the lids disappearing as soon as atropine was instilled for refraction purposes, and no return of them has been noticed since the proper glasses were worn.

INVOLUNTARY MOVEMENTS IN A CASE OF ATAXIA.*

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The purpose of this brief note is not so much to record an unusual symptom in tabes, for involuntary movements in this disease are more frequent than one is led to believe; but to call attention to the failure on the part of English and American observers, with few exceptions, to mention these phenomena in their descriptions of the symptoms of ataxia.

The patient, a widower, a gambler by occupation was 52 years of age. His life by reason of his vocation, was an irregular one as to hours and eating, but he had always been temperate in alcohol which is usual with his class, and never suffered from syphilis. In the use of tobacco he was always moderate. He had never had any serious sickness.

His family history was negative as far as it could be elicited. His father died of typhoid fever, his mother of senility at 83 years of age, one brother died of some stomach disorder, one sister of an unknown disease, and he had one brother living and well. He had no children.

His disease began three and one half years prior to his first visit to my office. The first indication of his infirmity consisted of a sense of restlessness; sharp pains in his legs, and a tightness around the chest as though a rope were bound tightly about him. His walking became insecure in six months' time, and gradually grew worse. Early in his disease he lost his sexual power, and complained of double vision.

In the few months prior to his first examination, he had had difficulty in emptying his bladder and frequent catheterization was necessary. He also developed about the same time severe pain in the rectum, which came in attacks lasting intermittently for some hours to two or three days at a time. His bowels had been constipated from the beginning of his disease.

For two or three months he had suffered from a cough associated with a greenish yellow sputum, and this was growing steadily worse.

Upon examining him in November of 1899, I found him

*Read before the Philadelphia Neurological Society, April 22, 1902.

generally emaciated and weak. He could walk with the assistance of a cane, but was very ataxic. He could stand but a few seconds with his feet close together, and if he closed his eyes he fell at once to the ground. His knee-jerks could not be elicited in the usual manner nor by reinforcement. His plantar reflex was present. The arm-jerks could not be developed.

He confused hot and cold sensations in places in both arms and legs. Pain sense was diminished but sensation to touch was good everywhere, while both were delayed in arms and legs and in an irregular distribution on the trunk.

There was no evidence of spinal atrophy. The tongue was smaller on the left side than on the right, but I was unable to conclude that there was any real hemiatrophy.

He complained bitterly of the sharp lancinating pains which were chiefly situated in the legs, but were at times felt in the chest wall and more rarely in the arms. His heart was normal. Examination of his lungs disclosed beginning consolidation.

Dr. de Schweinitz examined the eyes and reported as follows: Semi-dilated pupils, the left being the larger; typical reflex iridoplegia with moderate contraction on the effort of accommodation. In each optic disc there was a low-grade congestion with beginning degeneration in the deeper layers. The veins were unusually large, the arteries normal in size. The right external rectus muscle was paralyzed 25 degrees. With suitable correcting lenses vision was normal. The form-field was slightly contracted peripherally; the red field, especially on the left side, distinctly contracted. The other color-fields were not taken.

I have reserved till the last to describe the symptom which was of special interest. There was observed in the legs, especially in the right, a clonic spasm of the extensors of the toes. All of the anterior tibial group of muscles seemed to be involved. I could not observe any spasm of the posterior muscles whatever. These contractions were most distressing though painless. They were very different from the sudden violent contraction of the leg muscles common in ataxics which are often associated with sharp pain.

The spasm lasted irregularly for hours and appeared more frequently during the night. There were days when there was no spasm whatever. There was a possible relation to the onset of bad weather, though I was never absolutely sure that this was true. The contractions were slow, about two a second, rythmical and mild. Four to ten contractions were observed,

then a brief interval of rest, then a few more contractions and so on for an hour or so, after which as I have stated a long interval, often days, would elapse when they were entirely absent. These movements began about three months before death.

I was surprised in reviewing the literature of involuntary movements in ataxics to find so few references to this subject in the recent publications, especially in the English language.

Many of the systematic writers have failed to even mention this symptom in the descriptions of ataxia, while only brief mention of this condition is found in Church and Peterson, Hirt, Oppenheim, Raymond and Marie.

This phenomenon was described as early as 1840 by Cruveilhier²¹ and later by Leyden¹ (1863); Trousseau² (1865); Rosenbach³ (1876); Grasset⁴ (1878); Berger⁵ (1880); Audry⁶ (1887), and more recently by Laquer¹⁸ (1890); Rossalimo¹⁴ (1893); Raymond¹⁶ (1894); Marie¹⁷ (1895); Hirschberg²⁰ (1897); Oppenheim²⁸ (1898), and others.

Trousseau² described this condition as being a sudden twitching of the muscles. Later observers described the movements as being athetoid (Raymond, Laquer, Berger), and as choreiform and athetoid (Rossalimo and Audry). Rossalimo uses the word "anyotaxia" to describe this condition.

Audry's conclusions were as follows: First, In exceptional cases there is present in ataxics, choreiform and athetoid movements. Second, These movements are not an exaggeration of the spontaneous twitchings in the extremities, but a condition differing absolutely from ataxic movements. Third, They are accompanied by contractures and are due to irritation of the lateral columns.

Hirt¹⁵ also believes that these movements are indicative of irritation of the motor columns. They, however, lack the spasmodic character of athetosis, and the contractions are less quick and irregular.

More recent writers, however, notably Stern⁹, Marie, Oppenheim and Hirschberg are of the opinion that they are simply manifestations of incoördination.

We may divide the involuntary movements of tabes into (1) The associated movements, which may exist also in com-

bined system disease of the spinal cord, cerebral hemiplegia, spastic spinal paralysis and cases of unilateral lesion of the spinal cord (Strümpell¹⁰, Stintzing⁸). (2) Sudden twitching of the trunk or extremities which may occur with or without pain, and are more frequent at night. (3) Twitchings in isolated muscles or parts of a muscle. (4) Fibrillary twitchings. (5) Rythmical tremor resembling that of paralysis agitans (Hirt¹⁶). (6) Passive movements, which Hirschberg describes as being those movements of the legs or thighs which occur when a patient who is lying down attempts to sit up in bed without the assistance of his hands; or when he coughs (Stintzing), and (7) finally involuntary movements previously described as athetoid movements.

These movements are most frequently seen in the hand and fingers, though they are present also in the toes and feet, in the muscles of mastication and in the tongue. The little and ring fingers are usually first to be involved, but the middle finger may be involved, or some movement of the hand such as rotation, supination, flexion or extension may be the first movement to be observed.

They are involuntary, but may be partially controlled by great effort of the will, or by support.

Hirschberg has studied the subject very carefully and concluded that the condition is less rare than it is usually supposed to be, and that it can not be considered a complication of tabes, but rather a particular manifestation of motor incoördination.

When the eyes are closed these movements become more marked, in fact early in their development they may be apparent only when the eyes are closed.

Note:—Since reporting this case, I have seen a second case in which the fingers of both hands and the toes of the left foot were involved. The movements were slower than in the case cited above and were only present when the patient closed the eyes.

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PHILADELPHIA NEUROLOGICAL SOCIETY.

March 25, 1902.

The President, Dr. John K. Mitchell, in the chair.

Adiposis Dolorosa.—Dr. Max H. Bochroch presented a typical case of this disease.

Adiposis Dolorosa.—Dr. F. S. Pearce exhibited a case of *adiposis dolorosa* of the diffuse form in a negro woman forty years of age. The patient had begun to gain fat rapidly after the birth of her second child, twenty years ago. The woman reached a weight of 303 pounds and now weighs 295 pounds. The woman had not complained of subjective pain nor had she the typical tenderness on pressure, but the deposit of fat was typical of the disease, and there was the feeling as of "bunches of worms" on palpation. The wrists and ankles were free, but there were large masses of fat over the upper arm, the upper outer aspect of the thighs, the scapula and abdomen, which hung in heavy folds. There were no mental symptoms. She did considerable hard work and her general health was excellent. The patient had been referred to Dr. Pearce for diagnosis by Prof. Jas. M. Anders. While there was absence of subjective symptoms or disturbance of the mind, yet with the typical picture of fatty deposits the diagnosis seemed plausible. Forel has recently reported cases of *adiposis dolorosa* without pain or tenderness.

Dr. A. O. J. Kelly inquired of Dr. Pearce in what way his case differed from one of ordinary obesity.

Dr. D. J. McCarthy, with reference to the case shown by Dr. Pearce, said that the deposit of fat did seem different from that seen in ordinary obesity. In the upper part of the arm it seemed of a fibroid character. In discussing this subject the tendency is to run to extremes and classify all classes of pathological fat as *adiposis dolorosa*. In *adiposis dolorosa* distinct, painful lumps of fat can be felt. In this case there was no tenderness. We must differentiate between obesity and these conditions of localized neuritis in fat. There is probably a difference mainly in the chemistry of the fat rather than a difference in the condition of the fat.

Dr. William Pickett remarked that the name Dercum's disease or *adiposis dolorosa* is given to a symptom-complex. He thought that Dr. Dercum had so far not committed himself to the idea that this is a distinct entity. It is very likely that there are numerous cases ranging from acromegaly and myxedema to these cases of special form of obesity with neuritis. It may be that ordinary obesity belongs in this series. If, however, the name Dercum's disease is to mean anything, it must be restricted to those cases in which there is not only fat in localized deposits, but also tenderness in these masses. This does not invalidate the claim of Dr. Pearce that this case is related to the disease described by Dr. Dercum.

Dr. F. S. Pearce said that while this was not a typical case of *adiposis dolorosa*, yet he thought that it was allied to *adiposis dolorosa*. The physical character of the fat and its distribution seemed to point to this diagnosis.

Dr. J. K. Mitchell remarked that he thought it should be emphasized that almost every case of excessive fatty deposit presented varying spots of tenderness, often in fixed positions, but that did not make them cases of *adiposis dolorosa*. They have not the characteristic sym-

metrical fatty deposit found in Dercum's disease, where the method of deposit as well as its character has to be taken into consideration.

Primary Degeneration of the Pyramidal Tracts.—Dr. Wm. G. Spiller read a paper on this subject (See page 265).

The Muscle-factors of Ankle-clonus.—A paper on this subject was read by Dr. S. Weir Mitchell (See page 257).

Dr. William G. Spiller inquired whether or not in those cases in which clonus was obtained when the leg was extended on the thigh, the gastrocnemius took any part in the movement. When the leg is extended it is more difficult to obtain clonus, but in some cases, possibly where the extension is not complete, it can be developed.

Dr. A. A. Eshner said that if the leg is partially flexed in the ordinary way in which ankle-clonus is obtained, the gastrocnemius is relaxed to such a degree that it takes no part in the movement. This means that if the gastrocnemius takes any part when the leg is extended on the thigh this is not essential, as it does not enter into the movement when the leg is partially flexed. At Dr. Mitchell's request he had studied the relations of these muscles on the cadaver. Both of the muscles are supplied from the same nerve (internal popliteal) and the filaments for each come off close together. Whether as a result of mechanical factors or not it is a fact that the soleus is the essential agent in ankle-clonus. The soleus and the gastrocnemius together can be looked upon as a three-headed muscle with a common tendon, and as with other many-headed muscles one part may be set in action independently of others, and in accordance with their different points of origin.

New Diagrams of the Zones and Centers of the Human Cerebrum Based upon some recently-acquired Facts and a Study of Flechsig's Association Centers.—These were exhibited by Dr. Charles K. Mills.

Dr. William G. Spiller referred to the possibility of the second temporal convolution being the cerebral representation of the vestibular nerve, as Dr. Mills had suggested. There is nothing in anatomy pointing positively to that. Dr. Flexner and Dr. F. A. Packard had sent the speaker a brain in which the first and second temporal convolutions were intensely atrophied. The external bundle of the peduncle, which is believed to come from the second temporal convolution did not appear to be degenerated in this specimen. It is possible that the second temporal convolution contains fibers transmitting impulses upward, and that it is the representation of the vestibular nerve, but this remains to be proved.

Dr. D. J. McCarthy described Flechsig's method of investigation. So far as the developmental fibers are concerned he works with fetal brains of different periods of development, and serial sections of the entire brain are cut both in the horizontal and vertical directions. He has some twelve or fifteen thousand of these brain sections. For years Flechsig has insisted that in the study of mental conditions this method of serial sections is the only correct one to follow. His studies have been continued over a great length of time, and an article of two or three pages may represent the work of four or five assistants for two or three years.

Two Unusual Forms of Clonus.—This paper was read by Dr. John K. Mitchell (see page 260).

Dr. F. S. Pearce had had an opportunity to examine one of the cases referred to by Dr. Mitchell. He suggested that possibly one reason that there was easily excited lateral movement in the ankle was to be found in the condition of the joint. He thought there was sub-ankylosis at

the ankle and as a result the lateral movement appeared better than that between the tibia and astragalus.

Dr. John K. Mitchell said that the patient had marked ankle-clonus, very violent and long-continued. As far as he knew there was no special limitation to movement in the ankle joint.

Brachial and Pectoral Reflexes.—Drs. Mills and McConnell exhibited a patient showing certain unusual brachial and pectoral reflexes. Tapping over the inner aspect of the shoulder and also at the point where the second rib joins the sternum caused certain reflex movements in the fingers. They had found the same reflex phenomena in several other cases, and in these cases the other tendon and muscle phenomena so well known in the upper extremity were found.

Dr. D. J. McCarthy suggested that in tapping over the inner aspect of the shoulder the long head of the biceps was tapped, giving rise to a tendon-jerk, or the muscle-muscle-jerk of S. Weir Mitchell.

Dr. William Pickett said that in his study of the scapulo-humeral reflex, he had described a motion of the arm similar to that in von Bechterew's reflex, from tapping the point of the shoulder. It is barely possible that Dr. Mills' reflex is a modification of the latter, and that both are modifications of the von Bechterew reflex. The muscles implicated by tapping at any of these points are numerous and often far distant from the point tapped. He had a number of times observed the pectoralis major contract quite strongly on tapping at the inner edge of the scapula. There are analogies for this distant action of the muscles. Drs. Mills' and McConnell's observation he considered an extremely interesting one.

Periscope.

Deutsche Zeitschrift f. Nervenheilkunde.

(1902. Vol. 21, Heft 1-2.)

1. Multiple Sclerosis of the Central Nervous System. **HOFFMANN...**
2. Pathological Anatomy of Hemiathetosis, at the Same Time Contribution to the Knowledge of the Tracts Descending from the Region of the Corpora Quadrigemina. **HAENEL.**
3. Five Cases of Tumor of the Cerebellum. **VON FOSS.**
4. Contribution to the Knowledge of the Symptom Complex of Disseminated Sclerosis of the Posterior and Lateral Columns, Based upon the Changes Found in a Case of Meningomyelitis, Probably Luetic. **BYKELES.**
5. Clinical and Experimental Studies upon the Innervation of the Bladder, Rectum and Genital Apparatus. **MÜLLER.**
6. Book Reviews.

1. *Multiple Sclerosis.*—Hoffmann contributes a careful analysis of the literature of multiple sclerosis, partly illustrated by his own experience—which includes the observation of more than 100 cases—and three microscopical studies of the central nervous system. The etiology is not clear. The disease occurs most frequently between the ages of 18 and 35, equally in men and women, most frequently among the laboring class, and occupation appears to be without particular influence. Hoffmann is not inclined to lay great stress upon the hypothesis that the disease follows infection. In his own cases infectious diseases preceded the symptoms in 5 per cent. of the cases. Syphilis plays no part. The metallic poisons have been supposed to have influence; in his 100 cases there was but one in which the occupation brought the patient into contact with lead. Alcohol, dissipation, etc., do not appear to play any particular part. Exposure to cold, especially associated with dampness has been supposed to play an important rôle. In Hoffmann's cases there were 13 who gave such an history, but only 4 in which some other etiological factor was not accused. Emotional disturbance, parturition and injury have also been supposed to play important parts. Hoffmann is inclined to believe that they tend to make the disease worse when it actually exists, although in his 100 cases 13 gave the history of severe injury. However, in more than one-half of all cases no etiological factor can be determined. The symptomatology of the disease is exceedingly variable. Mentally there is diminution of intelligence, and perhaps symptoms simulating paralytic dementia. Occasionally there are attacks of Jacksonian epilepsy. The speech defects are scansion, dysarthria, aphasia, etc. The motor defects consist of hemi-pareses, paralyses, mono-paresis or paralysis in the distribution of a single motor nerve. The patients may have palpitation of the heart, vomiting, dyspnea, glycosuria and polyuria. The symptoms may simulate those of bulbar paralysis, or there may be symptoms of paralysis agitans, including vertigo, pro- and retro-pulsion, etc. In 54 per cent. of his cases Hoffmann observed disturbance of speech; in 64 per cent., vertigo; in 6 per cent. there were gastric crises associated with vomiting. There may be disturbance of sight involving one or both eyes, disturbance of the eye mus-

cles. There may be swelling of the papillæ observed by Hoffmann in 50 per cent. of his cases. Nystagmus was present in 56 per cent. of his cases. Ataxia of the iris or intention tremor of the iris has been described as a rare symptom. Disturbance of smell and taste are rare; disturbance of hearing is slightly more common. The spinal symptoms are particularly those involving the motor tracts. They are usually spastic, although flaccid paralysis with loss of the tendon tremor may occur. Intention tremor occurred in 71 per cent. of Hoffmann's cases. Swaying when standing with the eyes open is also fairly common. Various symptoms of paresthesia occurred in 66 per cent. of Hoffmann's cases. Objective hypesthesia with anesthesia, and occasionally disturbance of the stereognostic sense are also frequently present. In the majority of cases the tendon reflexes are exaggerated. The skin reflexes vary considerably. The abdominal reflex was absent in 29 per cent. of Hoffman's cases. Babinski's reflex is frequently present. In 60 per cent. of Hoffmann's cases there was disturbance in urination. Impotency occurred in 2 cases; conception was apparently not affected. Vasomotor changes are rare; muscular atrophies are also rare, but do occur. The course is variable. From time to time patients have remissions that usually are followed by a fresh increase. The diagnosis in the early stages is excessively difficult. Hoffmann mentions 23 other diseases that may be confused with multiple sclerosis. Cure is practically unknown, at least it is not certain. The prognosis is therefore unfavorable. The duration of the disease varies from 2 months to 20 years. Treatment consists in avoidance of other injurious factors, rest, moderate hydrotherapy, and the administration of certain drugs, particularly quinine, potassium iodide, nitrate of silver, strychnine, antipyrin, salicylic acid, ergotin, arsenic, etc., bath cures of various kinds, and mercurial inunctions, which in Hoffmann's experience usually make the case worse. The pathological anatomy is variable. There are changes in the vascular system, in the neuroglia and in the true nervous elements. No satisfactory explanation of these changes has been given. The majority of authors believe that the process is inflammatory; a few look upon it as a form of gliosis, perhaps congenital in type. Hoffmann does not believe that we are in a position to determine in which of the elements of the central nervous system the process actually arises.

2. *Hemiathetosis*.—Haenel reports the case of a man twenty-one years of age who had always been paralyzed on the left side. At the age of twenty he had contracted syphilis, and some months afterward developed cough, expectoration, emaciation and night sweats. The physical examination showed no motor nor sensory disturbances excepting slight sluggishness in mimicry on the left side. The left arm was somewhat smaller, kept in a position of slight flexion, and in continual athetoid movements. It was possible to control these only for a brief interval of time. The muscles were spastic; the tendon reflexes could not be elicited; the left leg was also atrophic. There was pesquinovaris, no athetosis, and fair control of voluntary movement. The patellar reflex was weak on the right side, and absent on the left side. Sensation was normal in both arms and legs. The patient had a tuberculous cavity in the lung from which he died. The autopsy showed the presence of an old focal lesion in the subthalamic region which had produced almost complete destruction of the right crus, and which extended from the right internal geniculate ganglion as far as the surface of the posterior corpora quadrigemina. It appeared to have been a vascular rather than an inflammatory process. The pyramidal tract for the left side of the body was absent. There were however, certain groups of fibers not normally present that could be distinguished in the dorsal portion of the

pyramidal tract in the medulla, particularly two groups which Haenel describes very carefully. He believes that there can be no doubt that these fibers were newly formed on account of their situation and general appearance. The source of these fibers was not clearly made out, but it is possible that they came from the pyramidal tract belonging to the other side. The case appears to prove the contention of Bonhoffer, that in cases of athetosis the subthalamic region must be involved. It was difficult to understand why atrophy should occur, although it is known that it almost invariably does occur, and it is also difficult to understand why spasticity was not present in the legs. No atrophic condition was found in the brain cortex.

3. *Tumor of Cerebellum.*—Von Foss reports five cases of cerebellar tumor. The first, a woman thirty-five years of age, a year before her death began to have severe headaches. On one occasion she became unconscious and was paralyzed in three extremities. Later these three paralyzed extremities frequently showed clonic convulsions. She developed vomiting, gradual loss of vision, her gait became uncertain, there were athetoid movements in the right hand and ataxia of the left hand with loss of the stereognostic sense. Argyll-Robertson pupils were present, and from time to time attacks of complete paralysis of one or more extremities. A diagnosis of cerebellar tumor was made and an operation performed, 4 days after which the patient died. At the autopsy a tumor was found in the posterior portion of the fourth ventricle with marked dilatation of the central canal, in the cervical position of the cord. The tumor was an angio-sarcoma. The second case, a woman 34 years of age, whose sight became bad about three months before admission to the hospital. There was nystagmus, some paresis in the right shoulder, diminution of sensation in the distribution of the left trigeminus, and persistent headache. Mercurial inunctions did not produce any improvement. The patient died and at the autopsy a tumor was found springing from the anterior surface of the right tentorium. Microscopically it was an endothelioma which could have been readily removed by operation. A similar tumor was found in the liver. The third case, a man twenty years of age, had had headaches for two years, which had developed two years after a severe fall from a horse. He was drowsy, appeared somewhat demented; there was enlargement of the cervical glands posteriorly, diminution in vision, inequality of the pupils, no paresis, slight ataxia of the extremities, and disturbance of gait. The patient improved somewhat on antisyphilitic treatment. The fourth patient, a man nineteen years of age, had headache for about 6 months. Towards the end of this period his vision diminished and he became finally completely blind. There was also deafness in the right ear, evidently of nervous origin, loss of smell on the right side, and the muscles of the lower extremities were hypotonic. The reflexes were lost with the exception of the Achilles tendon reflex; sensation was normal. Lumbar puncture was negative. The patient from time to time had attacks of vertigo and left the hospital, dying a short time afterwards. No autopsy was obtained. The fifth patient, a man 21 years of age, for five years an excessive drinker, had an attack in which he lost consciousness, then had severe headaches, vertigo, tinnitus, weakness of the legs and vomiting. His mind became somewhat weaker, there was diminution of vision, irregular gait, normal tendon reflexes and increased skin reflexes. Slight hyperalgesia and slight albuminuria were present. The patient improved in his symptoms upon potassium iodide, but the motor disturbances grew worse and he died. Autopsy was not obtained. Von Foss gives a valuable table of the symptoms of these five cases, and some of these symptoms are of considerable interest. For instance, the giving way of

the legs, the atypical disturbance of gait, and the rapidly fatal course of the two last cases. In three of these cases there was rigidity of the muscles of the neck, a symptom upon which Oppenheim lays particular stress.

4. *Disseminated Sclerosis*.—Bikeles reports the case of a man forty-five years of age, who at the age of twenty had syphilitic infection. From that time he was healthy until a few months before his death, when he had severe pains in the lower portion of the abdomen, sometimes associated with eructations and vomiting. There was difficulty in the retention of urine, some disturbance of gait with a feeling as if he were walking on cotton. There was obstinate constipation, and finally as a result of repeated catheterization, cystitis. There was some loss of power in the lower extremities, some diminution of pain sense in the same region, and the knee-jerks were distinct. Otherwise the reflexes were normal. The patient finally died of the cystitis, which had become complicated by a pyelonephritis. The essential changes found in the central nervous system were: an area of degeneration in the whole circumference of the spinal cord, areas of perivascular sclerosis in the lateral and posterior columns, with secondary ascending and descending degeneration. In the brain there was slight leptomeningitis, and in the medulla, in addition to this, some perivascular sclerosis. The essential clinical symptoms were paresis without spasticity, preservation of the knee-jerks associated with symptoms of degeneration in the posterior columns. The case resembles somewhat the symptom complex described by Rothmann, but differs in the fact that there were some pupillary disturbances, that is, the pupils were contracted and reacted sluggishly to light. The character of the pathological changes was strongly in favor of a luetic process.

5. *Genito Urinary Nerve Supply*.—Müller contributes a long paper upon the innervation of the bladder, rectum and sexual organs. He reports a remarkable case of a man forty-eight years of age suffering from transverse myelitis, in which every three or four hours the urine was spontaneously discharged without any control by the patient's will, and in the intermediate no dribbling occurred. A somewhat similar case was observed in a woman who also had some transverse lesion in the dorsal portion of the spinal cord. In a man who had an old transverse myelitis of 16 years' standing a similar peculiar condition existed, and in another, a man thirty years of age suffering from multiple sclerosis, the urine also was spontaneously evacuated. In a girl suffering from the same disease urination occurred spontaneously not more than once or twice a day, and catheterization showed the presence of a large quantity of residual urine. In a patient suffering from disseminated myelitis, who as a result of repeated catheterization developed cystitis, the urine was discharged in moderate quantities every hour. There was also spontaneous evacuation of the rectum. Diseases of the conus do not appear to interfere with the urinary functions, but it is interesting to note that in diseases of the lower portion of the spinal cord the same phenomena may ensue, and therefore Müller is convinced that the center for the bladder and rectum lies external to the spinal cord. He mentions a number of cases of locomotor ataxia in which there were marked disturbances in urination and in the sexual functions. In these cases there is evidently some anesthesia of the bladder and rectum. He mentions 2 cases of combined systemic disease in which there were disturbances of micturition; that is to say, the bladder was evacuated involuntarily at frequent intervals throughout the day. Similar symptoms may occur in cases of hysteria. He has also performed some experiments upon dogs which consisted essentially in the removal of larger or small-

er portions of the spinal cord. The results confirm Müller's opinion that the functions of the bladder and rectum are vegetative in character, and are innervated chiefly from the sympathetic nervous system. The article contains some very valuable data regarding the investigation of the disturbances of these functions in diseases.

J. SAILER (Philadelphia).

Centralblatt für Nervenheilkunde und Psychiatrie.

(1902. March 15.)

1. Experiments with Non-isolation Treatment and Hydrotherapeutic Measures. W. ALTER.
2. Embarrassment under Observation. VON BECHTEREW.
3. New Toxic and Therapeutic Properties of the Blood-serum of Epileptics and their Practical Applications. CARLO CENI.
4. Comments on F. Nissl's Paper: "Hysterical Symptoms in Simple Mental Disturbances." ERNEST STORCH. Reply by F. NISSL.

1. *Non-isolation and Hydrotherapy.*—In the Leubas Asylum it has been the custom to isolate many of the chronic insane on account of violence, etc. Alter has succeeded in managing these cases in open wards through the systematic use of prolonged baths and packs. At first patients were kept in the bath at a temperature of 34° to 36° C. from 1½ to 3 or 4 hours; later in some cases the period was extended to 12 or 14 hours. Sometimes preliminary and adjuvant doses of paraldehyde, trional or chloral were employed to render the subject more tractable, but soon it was possible to dispense with drugs, the patient gaining in weight, becoming quiet and sleeping well.

2. *Embarrassment under Observation.*—Von Bechterew describes three neurasthenics in whom palpitation of the heart, confusion, weakness of the limbs, etc., lasting about five minutes, were prone to come on when anyone "caught the eye" of the patient. Bechterew formerly reported such a case in which this symptom of "Blickschen" coexisted with "forced laughter."

3. *Blood-serum of Epileptics.*—Ceni claims to have begun simultaneously with D'Abundo (1898) his study of the question whether the blood-serum from a bad case of epilepsy can modify the condition of a milder one. Of six epileptics studied, two showed symptoms of true poisoning from the injections, while in the others no effect was discerned. Ceni concluded from this that the blood-serum of epileptics contains no antitoxic substance in the true sense, but does contain a special poison. Whether the resistance of the organism to this special poison can be increased, perhaps to the point of rendering the subject immune to its effects, was then studied in two ways: first, the blood-serum of one epileptic was injected into another in increasing doses; second, a patient's blood-serum was re-injected into his own circulation some days later. Ceni was able to answer the question in the affirmative from the results of each of these methods. Of eight epileptics thus treated two showed toxic effects, but the others were greatly improved both as regards the motor manifestations of their disease, and as regards psychic and sensory symptoms, so that an actual cure may be hoped for in some cases. Ceni concludes that these properties reside in certain products of tissue-change which in life are attached to the formed elements of the blood and only after removal of the latter from the body become free in the serum from contact with the "outerworld," so that in epileptics "a natural auto-immunization is not possible."

4. Storch's comments on Nissl's paper are, as Nissl declares in his reply, "polemical." It is facetious and not of serious value.
PICKETT (Philadelphia).

Monatsschrift für Psychiatrie und Neurologie.

(1902. March, Vol. 11, No. 3.)

1. Further Contribution to the Study of Cerebral Syphilis of the *Præcox* and Malignant Variety. GIOVANNI MINGAZZINI.
2. The Neuro-fibrillæ in Nerve Cells and Nerve Fibers of the Retina. HEINRICH VOGT.
3. Pathological Anatomy of Paralytic Dementia. THEODORE KÄS.
4. Degeneration of Perception. OTTO GROSS.
5. Experiment of Psycho-physiological Representation of Sense Perception. STORCH.

1. *Further Contribution to the Study of Cerebral Syphilis of the Præcox and Malignant Variety.*—Mingazzini reports 4 cases of cerebral syphilis, one of the *præcox* variety and 3 of malignant or rapid course. The author believes the autopsy findings show that such cases have fairly constant lesions not found in ordinary syphilis, namely, multiple softening and hemorrhages in different portions of the brain. From a clinical standpoint the malignancy is materially increased by such infections as scrofula, tuberculosis, malaria and scorbutus. Although most authors hold that the malignant course of syphilis is induced by alcoholic excesses, in one of the author's own cases alcohol and all other secondary infections could be absolutely ruled out. Anti-syphilitic treatment is especially inefficacious in malignant (cerebral) syphilis. Luetics should be warned against the use of alcohol and avoid mental and physical overstrain.

2. *The Neuro-fibrillæ in Nerve Cells and Nerve Fibers of the Retina.*—Vogt studied the ganglion cells of the retina in a number of vertebrates, including man, by methylene blue, Holmgren's and Bethe's method. In all his preparations the author found a fibrillary network in the cell, its process an axis cylinder, however the findings were best shown by Bethe's method. The fibers were mostly arranged in definite bundles. The intracellular ramifications of the fibrillæ were exceedingly complex in cells possessing the greatest number of dendrites. In addition to the fibers which passed through the cell to enter a process on the opposite side bundles were often observed broken up at the periphery entrance, some fibers of which entered the adjacent dendrites. Occasionally nerve fibers were found anastomosing with each other without the agency of a cell body (dynamical polaritate). The central cell nucleus was always surrounded by a free non-fibrillary space. Here and there ganglion cells showed bundles which contained fibers arranged rope-like or a large number twining around one or two fibrillæ tendril like. The brain of the calf presents a similar picture in different sections and with different stains. Cell anastomosis was not found in man because of poor specimens. Ganglion cells of the horse showed the best anastomosis. Specimens showed no anastomosis between processes of the same cell. Many axis-cylinders terminated in an actual formation of pericellular network which was in direct continuity with the intracellular network. The author concludes from his extensive studies that a neuro-fibrillary structure of nerve cells and their processes, as well as their continuity, is abundantly proven. Microphotographs and plate drawings accompany the text.

3. *Pathological Anatomy of Paralytic Dementia*.—Abstract to be given at completion of the article.

4. *Degeneration of Perception*.—Gross presents an hypothesis for the explanation of certain mental phenomena seen in the insanities. If the nervous elements show an abnormal tendency to exhaustion the faculty of perception suffers; the individual "fails to grasp the subject" and an intrusion of varied ideas occurs and incoherence results. If added to the foregoing an abnormal excitability remains after exhaustion, a new series of associated perceptions are easily induced, and the clinical picture of mania obtains. On the other hand, melancholia is the result of extreme exhaustion, but with the absence of excitability. A genius shows an absence of fatigue with a lively associative excitability, consequently the sequence of a given series of perception is not broken.

5. *Experiment of Psycho-physiological Representation of Sense Perception*.—Abstract to be given at the completion of the article.

L. P. CLARK (New York).

Allgemeine Zeitschrift f. Psychiatrie.

(1902. April, Vol. 59, No. 1.).

1. Mental Diseases in the Army. EWALD STIER.
2. The Etiology of Mental Diseases Based on Chronic Alcoholism. LUTHER.
3. The Bed-treatment of Chronic Psychoses. ADOLF WÜRTH.
4. Contribution to the Differential Diagnosis of Hysteria and Kataton-ia. KAISER.
5. The Comparison of the Cerebral Spinal Fluid in Paralytic Dementia and Other Forms of Dementia. SCHAEFFER.
6. A Decision of Responsibility. H. KORNFIELD.
7. Notes on the Construction of Tropical Asylums. P. C. J. VAN BREDO.

1. *Mental Diseases in the Army*.—In the army statistics there is no tabes or paresis in officers without a luetic history. However, alcohol and trauma precipitate tabes and general paresis very frequently. Hysteria in men is quite common in the armies of middle European countries. In the German army during 1870-71, the traumatic psychoses, which include the epilepsies, was 13 in 100. Army statistics on mental diseases during peace or war are very poor. Better information is hoped for in the future, as an examination on mental diseases is now required of all military physicians on the German army.

2. *The Etiology of Mental Diseases Based on Chronic Alcoholism*.—Luther reports 8 cases of mental diseases developing on a background of delirium tremens. He holds the prognosis in such to be favorable for recovery from the single attack, but relapses are frequent on account of the neuropathic basis generally present. He also reports the histories of 18 cases of alcoholism occurring in the feeble-minded, in which the prognosis was very bad. More or less complete mental degeneration followed rapidly.

3. *The Bed-treatment of Chronic Psychoses*.—As the results of six months' bed treatment of 100 cases of mental diseases the author concludes that the patients in the chronic mania wards were much quieter, and destruction and violence were much less frequent. The necessity of isolation, narcotics and physical restraint was lessened. There were no changes in the body weight of the bed patients. Their general care was made easier and better.

4. *Contribution to the Differential Diagnosis of Hysteria and Katatonia.*—Kaiser holds that katatonic symptoms are often present in hysteria and *vice versa*. The differential diagnosis rests upon a general clinical picture of the two diseases and not upon single symptoms. The essential psychogenic character of both diseases must be borne in mind.

5. *The Comparison of the Cerebral Spinal Fluid in Paralytic Dementia and Other Forms of Dementia.*—Clonic convulsions in epilepsy were materially lessened by lumbar puncture, and the degree of post epileptic coma was also diminished. In dementia paralytica the cerebro-spinal fluid pressure was always increased to an average of 182 mm., as compared with 40-100 mm. for the normal. In 2 cases of paresis the pressure fell from 200-270 mm. to 60-80 mm. after paretic convulsions. In another case after inunction treatment of iodides the pressure fell from 200 mm. to 90 mm., and a distinct remission of the disease resulted. In secondary terminal dementia and hydrocephaly and feeble-mindedness, increased pressure also existed. A chemical examination of the cerebro-spinal fluid in 12 cases of paresis showed an increased per cent. of albumin, while sugar was diminished; in a lesser degree the same findings held true for the dementias and different states of feeble-mindedness.

6. *A Decision of Responsibility.*—Kornfeld presents a translated summary of the expert testimony and court acquittal of a case of paranoia in our own country. The author believes the same court decision would not have been reached in Germany.

7. *Notes on the Construction of Tropical Asylums.*—The author presents a summary of his views in regard to asylum construction in the tropics, with special attention to the economic features. The text is accompanied by a ground plan. L. P. CLARK (New York).

Archives d'électricité médicale.

(1902. February, No. 110.)

1. The Mechanism of the Action of the Electric Arc on the Tissues in Photo-Therapy. H. BORDIER.
2. A New Method of Anesthetizing Teeth by Electricity. RÉGNIER AND DIDSBUY.
3. Technique of Treating Uterine Hemorrhage Employed by Prof. Bergonie. BARIET.
4. The Action of High Frequency Currents (Auto-conduction) upon Animal Thermo-genesis. H. BORDIER and A. LECOMTE.
5. The Present Condition of the Department of Diagnostic and Therapeutic Physics founded by the Hotel Dieu at Toulouse. T. MARIE.
6. Incidence Indicated Adaptable to any Radiographic Couch. H. GUILLEMINOT.
7. An Electro-thermic Pad. H. B.
8. Statistics of the Electro-medical Department in St. Audré's Hospital at Bordeaux. J. B.

1. *Electric Arc Action.* An experimental research made with the arc light apparatus of Lortet and Genoud to determine whether the erythema produced in the skin from exposure to the arc light is due to heat rays or to chemical rays. In order to apply the heat rays only, the author employed the well known solution of iodine in chloroform, which was circulated through the rock crystal cooler directly applied to the skin. The conclusion is reached that the action of the electric arc light from the above apparatus upon the tissues is wholly due to the

actinic rays of short wave length, and that the erythema or vesication occurring in the tissues under the cooling compressor do not result from heat as one would suppose *a priori*.

2. *Dental Anesthesia*.—A description of a complicated and uncertain method for anesthetizing dental nerves by applying the unipolar discharge from an ondin resonator.

3. *Uterine Hemorrhage*.—Prof. Bergonie employs a strong continuous current (90 m.a.) applied to the uterine cavity by an insulated electrode of special construction, frequently for a quarter of an hour. Data of successfully treated cases are also given.

4. *Animal Thermo-genesis*.—After subjecting rabbits for variable periods of time to electro-magnetic field of a d'Arsonval solenoid traversed by oscillatory currents of high frequency, and then placing them in a d'Arsonval calorimeter, the authors find that under the particular conditions employed by them the heat-producing capacity of rabbits is increased one-thirteenth.

5. Unsuitable for abstract.

6. A description of an adjunct to the X ray tube holder that consists of a metal cross which can be readily and rapidly adjusted to occupy any region of the anti-cathode field.

7. A description of an electro-thermic pad for applying dry heat to any part of the body.

8. Unsuitable for abstraction.

R. H. CUNNINGHAM (N. Y.).

Archives d'électricité médicale.

(1902. March, No. III.)

1. The Radiochronometer and the Experimental Definition of the Different kinds of X rays and similar radiations. L. BENOIST.
2. The Treatment of Facial Neuralgia with Galvanic Currents. VERNAY.
3. The Electrical Installation at the Rennes Medical School. E. CAS-TEX.
4. The Electrical Treatment of Sciatica. FÉLIX ALLARD.
5. Clinical Facts. Aneurism of the Aorta and Radioscopy.
6. A New Arc Lamp with Iron Electrodes for Photo-therapy. J. B.

1. *Radio Chronometer*.—A description of an instrument for indicating the penetrative power of X rays in which the transparency of a thin disc of silver is contrasted with the relative transparencies of twelve circumferentially-arranged sectors of aluminum of different thicknesses.

2. *Facial Neuralgia*.—In this paper the author relates the history of the successful treatment of fever patients with trifacial neuralgia with strong continuous currents applied daily for from 20 to 32 days. The author summarizes as follows: (1) The electrical treatment of trigeminal neuralgia is a curative one which may be relied upon not only in recent and benign cases, but also in grave cases of long standing if a current of sufficient intensity is employed for a sufficient duration. (2) The current employed should be the constant galvanic. Its intensity should be at least 40 m.a., and may be increased according to the case to 50, 60 or 70 m.a., or even more, and should be applied for from 30 to 60 minutes. (3) The necessary intensity should be used from the first day of treatment if possible, and the applications should continue uninterruptedly for the following 10, 20 or 30 days, according to circum-

stances, even when notable amelioration occurs at the beginning of the treatment. (4) The facial electrode should be at least 150 square centimeters in area, flexible and well moistened. It should be applied over the entire distribution of the trigeminus, from the top of the forehead to the lower jaw, even if the neuralgia is confined to only one branch of the nerve. The indifferent electrode, likewise well moistened, should be at least 200 cm² for currents of 40 m.a., or from 300 to 400 cm² if stronger currents are employed. (5) The treatment is absolutely harmless if care is taken to very gradually increase the current at the beginning and gradually decrease it at the end of the application, which necessitates a good rheostat, for any sudden variation of the current, although not dangerous, might produce intense vertigo or syncope. (6) Even the strong currents will be well borne if at the beginning the current strength desired to be used throughout the administration is exceeded by 5 or 6 m.a. (7) The active electrode should be preferably the positive; but in case of unsuccess with this pole of a certain number of applications one should not hesitate to employ the negative pole, especially if trophic disturbances are present. (8) The action of the current is probably due to the electrolytic effects produced in the trunks, roots and peripheral terminations of the affected nerve.

3. Descriptive and not fitted for abstracting.

4. *Sciatica*.—After briefly referring to the various causes and kinds of sciatica and sciatic neuritis the author fully reviews the various modes of electrical treatment, such as faradism, galvanization, Franklinization, high frequency currents, etc., preferably to be employed for the treatment of the various varieties of these diseases in a rational manner.

5. *A Description of a Radioscopic Examination of a Patient with Aneurism of the Aorta, accompanied by a good Radiograph*.—The writer concludes that, Radioscopy allows the clinician to rapidly diagnose an aneurism of the thoracic aorta. A tracing made upon tracing paper of the contours of the opacity allows the progress of the disease to be followed. Aneurisms examined with the screen show sometimes feeble pulsations, sometimes strong pulsations. With aneurisms with feeble pulsation no diastolic murmur of aortic insufficiency is found on auscultation, but with those with strong pulsation, usually diastolic murmurs and other signs of aortic insufficiency are present.

6. A description of a small arc lamp containing two iron electrodes instead of the usual carbons, connected in series to give a double arc with the 110 volt circuit. The electrodes are placed in a small hollow metal cup on a handle, with water jacket and removable cap with orifice for the exit of the voluminous ultra-violet radiations which the two iron arcs deliver.

R. H. CUNNINGHAM (N. Y.)

Archives d'électricité médicale.

(No. 112. April, 1902.)

1. The History of the Discovery of Electrotonus and the Character of its First Theory. DR. WIASEMSKI.
2. On the Law of the Excitability of Nerves in a Pathological Condition. J. CLUZET.
3. The Electro-medical Equipment at the General Hospital in Tonos. MME. B. MAUREL.
4. Practical Electro-therapy: the Electrical Reactions of the Acoustic Nerve and the Treatment of Some Diseases of the Ear by Electricity. DR. BARRET.
5. Clinical Facts. Dr. Louis Sejuine. A Trial of the Treatment of Cancer with X rays.

1. *Electrotonus*, writes the author, was discovered sixty years ago. Although physiologists in general attribute its discovery to du Bois Reymond, Dr. Wiasemski attempts to show that on the part of du Bois Reymond there was no discovery of the extra-polar currents in 1843, as their existence had been known since 1842, having been recognized and described by Longet and Guérard as "*derivation currents*." While du Bois Reymond's theory of the nature of the electrotonic currents has been entirely abandoned by physiologists, Lanset's opinion of the nature of the extra polar currents has been developed, although in a modified form, to form the fundamental basis of the theories of Grünhagen and of Hermann. Therefore, to Longet and Guérard the credit of the original discovery should be given.

2. *Law of Nerve Excitability*.—Having shown that Weiss' law holds good for both man and the lower animals, the author contributes a further investigation as to whether or not this law still prevails in frog nerves some days after division. From his results he finds: (1) The formula of Weiss, $Q = a + bt$ is always as correct for the distal portion of the divided nerve as for the normal nerve. (2) If one compares the formulas obtained with the same pole in both cases, the co-efficients a and b are much smaller for the divided nerve than for the normal nerve. (3) If the formulas obtained with the two poles in both cases, the co-efficients a and b , which have a minimum value with the active negative electrode on the healthy side, have, on the contrary, a minimum value with the active positive electrode on the side with the divided nerve. After curarization of a nerve where hypo-excitability and inversion of the formula occur, the coefficients a and b are much greater than in the normal state.

3. Not suitable for abstracting.

4. *Acoustic Nerve Reactions*.—In this contribution to practical electro-therapy the author fully discusses Brenner's, Erb's and Duchenne's methods of using the galvanic and faradic currents in the diagnosis and treatment of ear diseases. The author admits that in normal ears a reaction of the acoustic nerve is not only difficult to obtain but is usually absent even though the intensity of the current is increased to the limit of toleration. When a sonorous reaction is readily obtained with currents of 5 or 6 m.a., where the presence of disease of the external and middle ear can be excluded, hyperemia of the labyrinth or of the acoustic nerve should be suspected. In the treatment of hysterical deafness, tinnitus, and auditory vertigo the continuous or uninterrupted galvanic current, applied according to Erb's method, will frequently produce decided amelioration, or possibly a definite cure of the symptoms. For subacute and chronic middle ear disease faradization is to be preferred.

5. After twenty-nine applications of the X rays to an extensive cancer of the breast, the patient continued to get worse and finally died, although during the treatment the edema and pain in the affected region disappeared.

6. A description of various varieties of electro-medical and X ray apparatus exhibited at a meeting of the physical society.

R. H. CUNNINGHAM (New York).

Revue Neurologique.

(1902. No. 5. March 15.)

1. Results of a Fracture at the Base of the Skull; Apparent Recovery and Death after 17 Years in Dementia and Total Epilepsy. D. ANGLADE and G. CHOCREAU.

2. Facial Hemiatrophy in Its Relations with Lesions of the Inferior Cervical Ganglion. BOUYEYRON.

1. *Fracture at the Base of the Skull.*—After a very minute report of the case the authors sum up. "First there is the very commonplace accident of a man's falling from his horse and fracturing the base of the skull; he suffered only two months with deafness and facial paralysis on the left side. For over four years he worked as usual, then was suddenly seized with true attacks of generalized epilepsy. The faculties little by little give way, the patient became irritable and impulsive in his dementia, and was confined. At the hospital he behaved like a maniac, incapable of understanding or speaking. Epileptic attacks were almost daily, convulsions generalized. Cachexia extended to all the organs, and the patient succumbed at the age of thirty-eight, seventeen years after the accident, about two after the onset of epilepsy and mental trouble. So much for the clinical facts. The anatomopathological statements offer no less interest. How are the symptoms to be accounted for? In the region of fracture, on each side and in the middle part of the third temporo-occipital convolution, there was simply a little line of softening. In the right hemisphere the zones of softening involved the frontal lobe, *influenced it more*; the temporal lobe in its sphenoidal extremity, the inferior third of the two ascending convolutions, and covering these lesions was a very thick dura mater, showing with pachymeningitis. The vessels of the pia matter were obliterated at the circumference of the focus of softening.

What had taken place? Seemingly there was a crack without great displacement of the fragments, hence, facial paralysis and deafness. There was no infection at the time of the accident, but this followed slowly, consequently meningitis, vascular thromboses, softenings and similar symptoms; epilepsy and dementia. Epilepsy might strictly be explained by extended and deep lesion of the frontal lobe; but not if this were partial, since the destructive lesions were unilateral. The microscope explains the fact.

If the macroscopic lesion predominates in front and in the right hemisphere reaches only a little way into the Rolandic zone, inflammation, denoting a violent reaction, begins behind. This was very marked near the paracentral lobule. Perhaps in this diffusion a lesion distinct from inflammatory reactions, and occasioned by some irritant, such as a tumor or abscess, lies the explanation of the epilepsies which occur in patients whose motor zones appear healthy on post-mortem. It must not be forgotten, say the authors, that the present patient showed total epilepsy, which was possibly because the inflammatory reaction passed to the opposite side. This reaction was not alone in the brain. It was found, coincident with important vascular lesions in the protuberance, bulb and in the cervical medulla.

2. *Facial Hemiatrophy.*—In two women, aged respectively thirty-six and twenty-three years, facial hemiatrophy was seen to immediately follow tuberculous lesions of the corresponding apex. The elder, strong and vigorous, with no diseased inheritance or loss or nerve force, but a widow of a phthisical and remarried to a tuberculous patient, became infected with tuberculosis. The lesions were exclusively in the left lung, especially at the apex. Fever and stitch in the side forced her to go bed, and when she arose, about twenty days later, she saw herself that her left cheek was thinner and more hollow than the right. While she had been in bed its skin had seemed "crisp." From that time atrophy of the orbital cavity, face and the greater part of the left side of the neck to the clavicle increased; later it reached over the left side of

the thorax below the breast, encroaching upon the left arm; the patient felt no special pain, neither saw spots nor change of color in the atrophied region. Always cold, she interpreted it as a feeling of shrivelling, or of a mask on her skin. There was no motor paralysis or anesthesia, but perspiration ceased in the atrophied region, little by little, and the skin became much more dry than in the healthy regions on the other side. There was no sensorial trouble. In August, 1899, the symptoms justified a diagnosis of a pleuro-pulmonary lesion, more pleural than pulmonary. The right lung was still normal. While the profile from the right seemed to show the patient as younger, seen from the left she looked sixty. The thin skin was stuck to the adjacent tissues, and it was hard to raise it or fold it. The temple, orbital cavity and the neck on the left as far as the clavicle were entirely atrophied, and this atrophy seemed to reach all the surrounding tissues. On the right the eyelid drooped, although it was not paralyzed, and the reactions of the pupil were normal. The cheek bone, inferior maxilla, masseter and sternomastoid of that side seemed atrophied. Slight atrophy attacked the left arm and thoracic region below the breast. Muscle contracted on faradization, and there was no paralysis of sense or movement, although there were sometimes spontaneous fascicular contractions under the influence of cold in muscles of the face. Perspiration was not secreted on the left side even under most violent exercise or heat influences. Since August, 1899, this hemiatrophy has remained the same, uninfluenced by electric or any other treatment.

The second case was of a young woman whose father had fibrous pulmonary tuberculosis with unilateral chronic sciatica, and whose family history included hysteria and pulmonary bacillosis of congestive form without expectoration. In June, 1899, she was attacked by bacillosis of febrile character, localized at the apex of the left lung. Simultaneously she had neuralgic pain in the left side of face and neck; all nerve endings in these regions were extremely sensitive to touch or to draught, and when thus influenced her skin became very warm and red, the left eye became filled with tears and bloodshot, the left nostril secreted abundantly, and the left side of the mouth secreted a thick and viscous saliva like the white of an egg. At the same time there was cardiac acceleration, pulse increased even from 62 to 133 to the minute. The skin of both hands had become habitually cyanosed and cold, and there was very evident palmar hyperhidrosis; there was marked gastric hyperesthesia, and eating was immediately followed by acute pain. At the beginning of the pleuropulmonary attack, these painful and uninterrupted paroxysms were accompanied by a rise in temperature which varied between 38 deg. C. in the morning, and 39 deg. C. in the evening. At the same time the left apex certainly showed lesions of pleuropulmonary tuberculosis. A new and extraordinary point with this was a very strong breathy sound which extended through the entire track of the left subclavicular artery. There were also very slight but frequent hemotyses.

A fortnight after the last attack the left side of face and neck to the clavicle began to atrophy in comparison with the healthy regions corresponding. For six months this cervicofacial hemiatrophy increased with almost unbearable pain, but at the end of this time the pain seemed to diminish. Repeated revulsion with hot needles was performed on the left apex, hoping to affect the inferior cervical ganglion which the author believed to be the source of all the trouble, and which he supposed was imbedded in a tuberculous pachypleuritic tissue. Nevertheless the therapeutic success was not pronounced enough to affirm with certitude that the sedation of the painful periods was any more the result of in-

tervention than of the natural progress of the affection. At this time the disease seemed to remain stationary. The pleuropulmonary lesions were improved, permanent cold and cyanosis of limbs disappeared and the other symptoms were diminished. Nine months after the onset of hemiatrophy the patient made a pilgrimage to Lourdes and came back free, she said, from all suffering; indeed the psychical improvement was considerable. Moral depression gave way to great hope, and under the influence of the new mental orientation the patient was seized with bulimia, which helped not a little in overcoming the tuberculous lesions. In March, 1900, there was diminution of respiration in the left apex, in the supraspinal fossa as well as in the supraclavicular. The vibrations there were less than in the corresponding side, but there were few râles. The eye remained as before. The temporal fossa and the left cheek had deep hollows, and the skin was adherent to the tissues. The muscles and skin remained as formerly, except for slightly increased dryness. Hair, which in the front parietal region had dried and fallen out while the illness was augmenting, now grew naturally; and most remarkably a frontoparietal hyperstosis, very painful to pressure and like diffuse periostosis, though the patient was free from syphilis, disappeared without specific treatment at the same time that the hair began to grow again.

To interpret these two observations, one must recall, says the author, the situation and branches of the inferior cervical ganglion. This, really a thoracic ganglion, is situated in a small hollow which forms the top of the parietal pleura with which it is in direct relation, and one will see that it may be involved in the processes of pachypleurite of which the apex of the lung may be the source. On the other hand, it is in relation with the articulation of the head of the first side, the first dorsal vertebra, and behind that are the inferior verves of the brachial plexus. Finally, before this in the infraclavicular artery, which Vieussens' valve, when it exists, surrounds completely. Ordinarily it receives the ramifications of the last two cervical verves and of the first dorsal. From this ganglion also radiate the superior fibers which form the vertebral nerve and the anastomose fibers which may be in relation with the carotid plexus through the intervention of the superior cervical ganglion; then the external fibers which follow the vessels of the arm, and finally the internal fibers, to the inferior cardiac nerve or the third cardiac nerve. This distribution and anatomical relation, explain why the patients showed: (1) vasomotor troubles, trophic and secretory of the left half of the face and neck; (2) cold cyanosis and hyperhidrosis of arms; (3) crises of cardiac acceleration. The sound of the left subclavicular artery which surrounds Vieussens' valve is explained very well also by a pleuropulmonary infiltration near by. It is judged, then, that the symptoms presented by both patients were the result of a lesion of the inferior cervical ganglion; and it is thought that the lesion was attributable to a process of tuberculous pachypleuritis surrounding this ganglion.

JELLIFFE.

MISCELLANY.

EXCISION OF THE SPINE BIFIDA AND ENCEPHALOCELE. John Lithgow (British Medical Journal, January 18, 1902).

Within the past few years the old method of treatment for these affections by injection of Morton's fluid has been almost discarded for the newer and more surgical method of excision. The author reports a case of spina bifida of meningocele variety about the size of a hen's egg. During spasms of whooping cough the tension in the sac became so great that there was danger of rupture, so when the spasmodic

cought subsided the sac was excised. The child was all right a year later. Lithgrow also removed from a child twelve days old an encephalocele as big as the child's head and attached by a pedicle to the occipital region. The child did well after operation, but fourteen days later, when all danger was considered to be past, death suddenly resulted after some convulsive seizures. The tumor was lined throughout with brain substance and was filled with fluid.

W. A. BASTEDO (New York).

THE TREATMENT OF TOXIC AMBLYOPIA. Dr. Terrien (*Le Progrès Médical*, April 19, 1902).

In toxic amblyopia the treatment is symptomatic after stoppage of tobacco or other poison. For insomnia or nervousness small doses of opium and bromide of potassium may be given for a few days, and then strychnine begun. This is best given in one milligram doses subcutaneously, once a day, but if this treatment is inconvenient it may be given in pills.

| | |
|---------------------|----------------------|
| R Strychnin. sulph. | 0.001 (gr. 1-60). |
| Quassinæ amorph. | 0.01 (gr. 1-6). |
| Pulv. rhei. | q. s. ad pil. No. 1. |

Take one such three times a day. At the same time electricity, the continuous current in strength just short of being painful, should be employed once a day. One sponge-electrode may be placed on the forehead and the other stroked alternately beneath the eyes.

W. A. BASTEDO (New York).....

THE TREATMENT OF THE DIGESTIVE ORGANS FOR MENTAL AND NERVOUS CONDITIONS. Franz Glénard (*Le Progrès Médical*, March 8, 1902).

The abuse of castration, trephining, sympathectomies, etc., owing to false theories of the causation of disease, has tended to retard truly indicated surgical measures. There is undoubtedly an enteroptotic neurosis, a hepatic neurasthenia and a hepatic agoraphobia, which require for treatment regulation of the diet and laxatives, instead of bromides, hydrotherapy and tonics. In the neuroses, after an alimentary régime, no medication is better than purgatives and chologogues for combatting insomnia, debility, dyspepsia and moral depression. In every neurosis or psychosis the digestive apparatus should be explored, including the liver, intestine, stomach, kidney and spleen as to their size, consistency, sensitiveness, location, relation and degree of fixity. The organ most frequently at the bottom of a neurasthenia is the liver, and who would deny that the mental functions become sluggish when the digestive tract is working poorly. Macpherson, at the Stirling insane asylum, submits all the patients to lavage of the stomach, laxatives, intestinal antiseptics and strict diet. Glénard cites several cases, as follows: A young woman with enteroptosis who had eaten some forbidden food, wept and became highly neurotic, but soon after the administration of sodium bicarbonate became quite herself again. A young man of sedentary habits was attacked with neurasthenic anxiety and digestive cachexia with vomiting, so that it was feared that he would die. He recognized nobody and talked as if insane, but after vomiting excessively following tickling of the uvula, he became rational, slept well, and the next morning was in his usual health. Therefore there do exist in digestive pathology conditions in which the effect on the nervous system is undeniable. Piqué says that digestive intervention is especially efficacious in the psychoses of depression, as melancholia. The author had such a case with gastro-hepatic crises, in which stenosis of the hepatic flexure of the colon was

made. An operation found the colon in this region tightly bound by adhesions, and left them broken up; now there are no more psychical manifestations. The author believes that in psychic states as well as in neurasthenia a cure results not from direct treatment of the nervous system, but from medical or surgical treatment of one or other of the viscera.

W. A. BASTEDO.

TREATMENT OF INSANITY BY CONTINUOUS BATHS. P. Keraval (*Le Progrès Médical*, May 3, 1902).

The baths at Heidelberg used by Kraepelin and W. Alter are continued day and night for weeks and months, the patients eating from tables placed over the bath, and being allowed to smoke, read, crochet, etc. At night a rubber air-pillow is supported beneath the head. The water is kept at 34 deg. C. (93 deg. F.)

Such baths are specific in mania, agitation and the acute delirium of general paralysis. By suspension in water in a hammock the feeble and paralytic escape injuries and bed-sores. Almost without exception the patients accept the treatment, though in some cases it must be begun in short seances. The ordinary functions of urination and defecation make the most trouble, but not more than they do in a cell. The patient is quickly calmed and rapidly gains an appetite. It is not of much use in epilepsy, but for delirium tremens it is valuable, combined with caffeine in large doses. Alzheimer reports success with these baths at Frankfurt, twelve bathers being constantly employed. Bieberbach has used them for a year at Heppenheim with very favorable results. In periodical insanity the subsequent attacks are especially mild. Insomnia is never persistent.

W. A. BASTEDO (New York).

INFANTILE CONVULSIONS. Prof. Déspine (*La Méd. Moderne*, April 9, 1902).

Infantile convulsions may be divided into two main groups, symptomatic convulsions, due to disease of the cerebral nervous system (meningo-encephalitis, tumors, hemorrhages, etc.), and idiopathic or essential. The latter group includes three main forms, external convulsions (eclampsia), internal convulsions (spasm of the glottis), and contractions of the extremities (tetany). The idiopathic forms are here studied as to etiology and symptomatology. Heredity plays an important part in causation. The influence of rickets is that of an auto-intoxication. Dentition is of no importance. In the newborn convulsions are usually due to organic lesion, and the prognosis is grave. Often asphyxia is a cause, and is due to congenital cyanosis, whooping-cough, bronchopneumonia. Many cases are attributed to poisoning by lead, alcohol, opium, santonin, etc., The most frequent cause is auto-intoxication (uremia, athyroidism, hypertrophy of the thymus, gastrointestinal disease). Reflex eclampsia may be due to irritation of the skin, ears or digestive tract. Clinically, eclampsia in infants is preceded by a stage of hyperexcitability of the nervous centers, manifested by hyperesthesia, exaggerated reflexes, electrical hyperexcitability. As to form, the convulsion is neither purely tonic nor clonic; exceptionally a purely tonic convulsion may occur. Commonly the spasm begins at the eyeball, extending to the face, neck, extremities and trunk; if localized, the face is usually the part involved. Bilateral symmetry is the rule; exceptionally the spasm is exaggerated on one side. Spasm of the glottis is characterized by a series of inspiratory or expiratory sounds; the paroxysm may end fatally by syncope, but typical cases are described which were saved by tracheotomy or by interbation. Spasm of the glottis is characteristically a disease of the first year of life;

more than 50 per cent. of all cases occur during the first six months. Compared with general convulsions or with spasm of the glottis, tetany is a rare condition. In 10,000 infants, tetany occurs 6 times; spasm of the glottis 31 times; eclampsia 61 times. JELLIFFE.

THROMBOSIS OF THE CAVERNOUS SINUS; REPORT OF FOUR CASES, WITH ONE CRANIAL OPERATION. E. W. Dwight and H. H. Germain (Boston Med. & Surg. Jour., May 1, 1902).

The diagnosis of this condition has rarely been made. The literature includes 178 cases in addition to 4 cases reported by the authors. Most authors agree that the treatment is entirely preventive. Those who suggest operation usually speak only of drainage through the orbit. In the case operated on by Dwight the sinus was revealed by trephining the temporal bone; this same operation was performed a month later in a case described by Hartley and Knapp. These two cases are held to justify the belief that thrombosis of the sinus is distinctly an operable condition. Incision into one sinus apparently relieved instantly and completely the interference with circulation in both. The cranial operation is not associated with extreme difficulty; it can be done under almost primary anesthesia; it is not associated with any degree of shock and it can be completed in a few minutes; the hemorrhage can be easily controlled. JELLIFFE.

SOME POINTS ON THE MANAGEMENT OF THE NEURASTHENIC. James H. McBride, M.D. (Journal of the American Medical Association).

Overwork alone rarely causes nervous breakdown. Worry and anxiety, prolonged mental application without rest are frequent causes; underlying which is an unborn instability of nerve element and derangement of the alimentary tract. The mental element in neurasthenia is important. It is shown by inability to fix the attention, the feeling of mental tire, loss of interest, the weakening of volition, the impairment of memory. The thoughts are always fixed on the body, and are limited to a set of morbid sensations, such hyperconsciousness of bodily ailments becoming often a true hypochondria.

The writer advises partial rest, rising at 9 o'clock, and resting two hours in the middle of the day, or complete rest if there is debility; but rest cures should not be too prolonged.

The personality, good judgment and discriminating sympathy of a trained nurse are all important. Frequent feeding, milk diet are not applicable to all cases. Exercise is essential and yet can do harm. Neurasthenics frequently have exaggeration of the feeling of tire and fatigue. If they have "anesthesia of the sense of tire" they will overdo without knowing it. Outdoor walks should be taken on the ground, not on pavements or verandas. Hill climbing should be reserved for convalescence. Morning cold baths are injurious if much below 78 deg. Mental symptoms need mental treatment.

W. B. NOYES (New York)

CAISSON DISEASE. A. H. Muir Macmorran (Brit. Med. Jour., April 26, 1902).

A partial recognition of some of the causes of this interesting modern malady has done much to decrease its frequency. The author cites a series of cases which developed in the recent building of the Greenwich footway tunnel. One of the chief reasons why there is less caisson disease than formerly is that in most instances the men are now subjected to a very careful and searching medical examination. The total percentage of rejections (made by the writer and his colleagues) of appli-

cants for permission to work underground was 18.8. The most important grounds for rejection are a high-tension pulse, booming heart sounds or reduplication of the second sound. This supervision is the first means of combating caisson disease. The second consists in reducing the CO₂ as far as possible. This was accomplished by the introduction of a blow-off tube in the shield and by injecting the air through screens of caustic soda. Macmorran believes the theory of hyperemia has been set aside by many on altogether insufficient grounds. He thinks that the true explanation of caisson disease lies in the combining of the two factors most frequently discussed in connection with it, namely, hyperemia of the deeper tissues and accumulated impurities in the blood, due to imperfect interchange of gases in the lungs. Nerve sedatives are to be preferred to opiates in the treatment of caisson disease, and in severe cases cannabis indica often gives excellent results. The nitrates and acetates of potassium are useful in the termination of the trouble, but by far the most important part of the treatment is the medical lock into which air passed over caustic soda is pumped till the pain subsides. Caisson disease will become a thing of the past if only suitable men are employed and if the suggested treatment is given to the injected air.

JELLIFFE.

LESIONS OF THE CONUS MEDULLARIS AND CAUDA EQUINA. Bertram W. Suppy, M.D. (*Journal of the American Medical Association*, May 10, 1902).

The conus medullaris occupies a position in the spinal canal directly behind the first lumbar vertebra, completely hidden from view by a mass of firm and coarse fibers, constituting the beginning of the cauda equina. Recent writers limit to that portion of the cord represented by the third, fourth and fifth sacral and coccygeal segments. The clinical picture produced by lesions of the conus medullaris is characterized by impairment of sensation over an area which involves the integument of the penis, scrotum, perineum, anus, inner aspect of the buttocks and posterior surface of the thighs. The sensibility of the mucous membrane of the penis and rectum may also be dulled. If the lesion is sufficiently destructive, loss of muscular power of the bladder and rectum may be seriously impaired, sexual power lost and bed sores may develop. When disease of the cauda equina is accompanied by typical symptoms it is easily recognized. Except when due to trauma, disease of the cauda usually develops slowly, producing symptoms more or less characteristic of root disease. The patient first experiences pain upon movement of the lower extremities; later the pain becomes spontaneous and persistent, with exacerbations. Subsequently anesthesia begins, and when the lesion is a uniform compression of the cauda, the function of the central fibers may be first disturbed. Bladder and rectum symptoms may appear early. Muscular weakness is present in proportion to the pressure on the motor fibers. There may be exaggerated reflexes at the beginning; later they are diminished and finally lost. Atrophies develop, electrical reactions may be altered. That which specially distinguishes diseases of the cauda equina is pain. A conus lesion may be associated with pain, if the cauda or meninges are involved; otherwise there is absence of pain. Differential diagnosis is important as disease of the cauda equina may often be amenable to surgical treatment.

W. B. NOYES (New York).

EPILEPSY, ITS ETIOLOGY, PATHOLOGY AND TREATMENT BRIEFLY CONSIDERED. William P. Spratling, M.D. (*Journal of American Medical Association*, May 3, 1902).

Epilepsy may be classified according to three epochs of life: (1) up to the age of 20 years; (2) during adult life; (3) after the beginning of senility. More than three-fourths of the cases occur in the first period. The epilepsies of the first period may be grouped under two heads: primary, or developmental, and accidental. The latter also occurs during the adult period, but with far less frequency. Two kinds of heredity must be considered: similar and dissimilar, the former meaning the transmission of the same disease from parent to child, the latter meaning that alcoholism, insanity, tuberculosis, chorea or a kindred affection in the parent is changed in type in transmission so as to appear as epilepsy in the child. In a study of 1,100 cases of epilepsy the author finds 16 per cent. due to similar heredity, 40 per cent. to dissimilar heredity, such as alcoholism in the ancestors, 16 per cent. in the males, 12 per cent. in the females; insanity in the ancestors 7 per cent., tuberculosis 14 per cent. Of accidental forms 11 per cent. were cerebral palsies; primary or developmental epilepsy after 20 years is probably never met with. After this age it is due to syphilis or traumatism, to alcoholism, ptomain or chemical poison. The writer believes that the sensory or angular cells in the second layer of the brain exercise a power of control over the motor cells in the layer above. When these sensory cells become weakened or destroyed they lose their power of control, and the motor cells explode; that is, they suddenly and violently give off their force at irregular intervals. The structural incompleteness of the sensory cells and consequent failure of inhibition, rather than the over production of nerve force by the large motor cells, is responsible for these periodic discharges.

The writer notes three specific lesions after paroxysmal discharges in uncomplicated epilepsy: (1) a partial disappearance of the tangential fibers of the cortex, "the neurones of association," so-called, and similar to lesions described in cases of general paralysis; (2) an infiltration of nerve cells by leucocytes; (3) the disappearance of the fine granules in the protoplasm of the cell substance of the cortical nerve cells. The latter are probably due to chemical changes dependent on nutritive processes. In treatment the use of bromipin, a brominized oil of sesamum, is advocated.

W. B. NOYES (New York).

PSEUDOMENINGITIS. T. Donath (Deut. med. Woch., April 17, 1902).

The presence of a symptom-complex resembling meningitis, without the demonstrable lesions of this disease at a later autopsy, has sometimes been noted, especially during epidemics of influenza. An unusual case of this kind is reported. The patient, a young man of eighteen, developed eleven days after an osteotomy for genu valgum a sudden rise of temperature, severe cerebral symptoms, loss of consciousness, muscular spasm, retracted abdomen, etc., with death following on the third day. Fat embolus and uremia could be properly excluded, and all the signs pointed to meningitis, possibly tuberculous. Autopsy showed some edema of the pia and surface of the brain, but no signs of any acute inflammatory changes. The influenza bacillus could be readily demonstrated in some of the lobules. The author calls attention to the diagnostic value of lumbar puncture in these cases, when ordinary means are of doubtful value.

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"Pediatrics," issue of November 1st, 1900. pages 349, 347, 338, 344.

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Original Articles.

POLIOMYELITIS OF THE ADULT.

By E. W. TAYLOR, M.D.,

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The occurrence of a true poliomyelitis in the adult, with acute onset under conditions suggesting an infection, is no longer disputed. Such cases have been reported by Gombault¹, Bernhardt², Cornil and Lépine³, Williamson⁴, Grawitz⁵, Niedner⁶, Jagić⁷, Hoppe⁸, Caverly⁹, and others. The confusion regarding the relationship of this affection to others, notably acute ascending paralysis (Landry) appears to be increasing rather than diminishing. The following report is made because relatively few cases with autopsy have been published, and also in the hope that the matter of classification in view of our growing knowledge of the pathological anatomy is of sufficient interest to permit a reopening of the general subject.

Case I.—J. C. L.,* an American by birth, unmarried, twenty-five years old, worked chiefly indoors, lifting. He had been especially overtaxed just before his present illness, but had not

*For the following clinical history I am indebted to Dr. E. M. Buckingham, Boston City Hospital, Dr. J. J. Minot, Carney Hospital, and Dr. Pillsbury, formerly a student of medicine at the Harvard Medical School.

been exposed to cold or similar influences. His family history was good, and his personal history showed no undue excesses in tobacco, alcohol or stimulants of any sort. He had had gonorrhea six years before this illness, followed three or four years later by a slight stricture. He had also had soft chancres, but sufficient evidence of syphilis was lacking. He had not suffered from rheumatism. His present illness began September 11, 1898. The onset was, to him, similar to previous experiences in taking cold. There was headache, backache, pain in the extremities, without sense of fever or chilliness. During that day he grew worse and he had a night of poor sleep. On the following day (Monday), he felt no better and could eat little. Thinking he had "grippe" he started to "walk it off" and kept on his feet the greater part of the day. His legs felt as well as they ever had, but his back was weak and gave him considerable pain when he suffered a jar, as in stepping off a curbing. He ate no dinner, but took a drink of whiskey, went to bed early and slept well. The next morning (Tuesday), he rose early to get whiskey, but immediately fell; he pulled himself to his feet by the aid of the bedpost, but found that he could not stand. He was, however, able to creep. He got his drink and went back to bed. He then found that he could not move his feet or toes. He had some nausea and vomited. A physician was called, who found the temperature to be 103.5°. He was forthwith sent to the Boston City Hospital in the service of Dr. E. M. Buckingham.

The following day (Wednesday), both thighs were paralyzed; he could not sit up nor turn in bed. The next day his arms were weak, particularly the right, and he was unable to breathe deeply, except by grasping the head of the bed and thereby bringing the accessory muscles into play. Sensation, he thought, was at no time lost in any part of his body, but there was at first a slight feeling of numbness in the limbs; they felt alternately warm and cold, and were often covered with sweat. This was especially noticeable on the right leg. The paralysis was flaccid from the first.

For the first seven days after entrance, the bowels moved only by enema; the catheter was used for two days; after that there was no difficulty with bowels or bladder. The temperature remained elevated for four days, became normal two days later, and remained so. The special senses were at no time disturbed; the appetite in general was good, and sleep was satisfactory. For about a week after entrance, there was some pain in arms and legs. His back ached when moved, otherwise not. The muscles of face, neck, deglutition and mastication were not affected.

About a week after entrance to the hospital and about ten days after the onset of the disease, voluntary movements of the arms became stronger, and the breathing less labored. A week later he began to regain slight control of his toes and feet and soon after of his hips. After November 1 he began to sit up an hour a day, supporting himself in an erect position by aid of his arms. His back remained very weak.

The physical examination on entrance showed no Widal reaction and no evidence of plasmodia in the blood. The urine had a specific gravity of 1023, without albumin or sugar, or anything significant in the sediment. November 9, pupils and ocular muscles were normal. The teeth were in good condition and showed no evidence of metallic poisoning. Cranial nerves were in general free of involvement. The chest was thin, movements feeble, but equal on the two sides; the accessory muscles were not used. Inspiration was feeble and prolonged; respiration was 28 and regular. Palpation, auscultation and percussion showed nothing abnormal. The heart was normal with a somewhat rapid pulse. The abdominal organs were negative. The arms were thin and the muscles flabby, the skin warm, moist and of natural appearance. Voluntary movements, both of flexion and extension, could be weakly made. The left hand-grasp was particularly weak. The legs were thinner and the muscles more flabby than in the arms; the skin was normal. Voluntary movements at the hips very weak; the flexors of the legs could be seen to contract, but not with sufficient strength to induce the slightest flexion of the knees. Motion of the feet and toes was possible, but weak. Passive motion was not limited in any joint. The knee-jerks were absent.

Sensation for contact, pain and temperature was not impaired. There was tenderness on either side of the vertebral column in the region opposite the angles of the scapulæ, and in the axillæ and popliteal spaces, without marked muscular tenderness. No notes of an electrical examination are obtainable.

November 11, the patient contracted a cold, during which he had difficulty in expectoration and respiration; his cough was feeble; the breathing was vesicular, with numerous râles. No tubercle bacilli were found in the sputum. November 14, the cough had diminished, respiration was easier and the lung condition decidedly improved. Slight improvement in movements also occurred and a very slight knee-jerk was obtained. There was no sign of contracture, beyond a tendency to keep the knees flexed.

By his own request the patient was discharged from the

City Hospital, and admitted to the Carney Hospital in the service of Dr. J. J. Minot.

November 22, examination showed essentially what has already been described. The knee-jerk was reported as again lost, with very slight plantar and cremasteric reflexes. Atrophy of legs and thighs was noted, and very limited movements. A fundus examination showed nothing abnormal. The patient was hopeful, and thought the movements of the legs were slowly improving. A certain amount of flexion at the right knee was possible, as well as movements of the feet and toes.

December 7 there was complaint of dyspnea which increased, though apparently not to an alarming degree. At 4 A.M., December 8, he appeared to be comfortable; when next seen an hour and a half later he was dead. His temperature had remained normal during his stay in the hospital.

This case presents a typical picture of poliomyelitis as usually met with in the adult; unexplained ill feelings with rise of temperature, followed by paralysis, involving all four extremities, but predominantly the legs, which reaches its height in one to three days, and then tends towards improvement; some subjective disturbance of sensation, passing in a few days, leaving a condition essentially of motor paralysis of the muscles of the trunk and extremities, without at any time disturbance of consciousness.

Autopsy—By Dr. G. B. Magrath, Dec. 8, 1898; six to seven hours after death. Other organs than the central nervous system showed nothing of importance. The brain, cord and a portion of the right sciatic nerve were preserved for microscopic examination. Portions of the brain—paracentral lobules—and of the oblongata and cord were hardened in alcohol for later Nissl staining. The remainder of the cord was preserved in 10 per cent. formalin, and Müller's fluid, the sciatic nerve, in Müller's fluid, and the brain in 5-10 per cent. formalin. The brain was normal in external appearance, except for slight adhesions between the dura and pia at the tip of both temporal lobes, but much more marked on the left. The cord also was normal externally, but on section at various levels, there was a very striking injection of the ventral horns, throughout the cord, marking them out sharply from the surrounding white matter. A culture made from the subdural space of the cervical region gave no bacterial growth.

Microscopic Examination—A study of the cord at var-

ious levels shows throughout its entire extent an almost complete disintegration of the ventral gray matter, extending to a considerable extent into the dorsal horns, and slightly into the surrounding white matter, confirming the appearances seen macroscopically. A more detailed study of the cord from below upward gives the following appearances: A section through the conus terminalis shows an exceedingly slight accumulation of cells in the neighborhood of blood vessels; otherwise there is at this level no abnormality. In the sacral

Fig. 1. Infiltration of a perivascular space with extravasated cells.

cord and lower portion of the lumbar enlargement the evidences of inflammation become more apparent. The perivascular spaces are in many areas infiltrated with extravasated cells, both in the ventral and dorsal horns. A Weigert section shows a clearly marked, though not complete loss of myelinated fibers in the ventral horns, loss of many nerve cells and partial degen-

eration of ventral roots. The blood vessels throughout the section, notably in the pia and nerve roots are completely distended with blood, but nowhere except in the ventral horns and portions of the dorsal horns does there appear to have been an exudate from the vessels. The cross-section of dorsal nerve roots at this level shows in several places small areas of necrosis which have the appearance of dependence upon local vascular disturbances.

At a slightly higher level in the lumbar enlargement the pathological process is very much more extensive, and the appear-

Fig. 2. Section stained by the Weigert method, showing partial degeneration of ventral roots.

ances here will serve as a type of the character of the alterations throughout the cord. A hematoxylin-eosin specimen shows the end results of a violent inflammation. The same conditions, in general, prevail as those already described, but much greater in degree. The ventral horns are filled with distended capillaries in the neighborhood of which are many extravasated cells. It is noticeable that among the cells of this exudate no leucocytes are to be seen, which is not remarkable in consideration of the fact that three months had elapsed from the acute onset

of the disease to the death of the patient. The nuclei of the remaining cells are for the most part small, round, deeply staining with hematoxylin; in general of the lymphoid variety. Occasional, elongated, somewhat vesicular nuclei may be seen; it is possible that many, or perhaps all of these nuclei may belong to proliferating neuroglia cells, as part of the reparative process; no mitoses, however, are discoverable. The general dilatation of capillaries extends distinctly into the dorsal horns and to a less degree into the white matter and vessels of the pia. The lesion is, however, so much more marked in the ventral horns, that that may be regarded as its essential location.

Sections stained by the Nissl method are of particular interest. The appearances in the lumbar region may again serve as a type of the changes found throughout the cord. Most noteworthy is the diminution in the number of nerve cells. At one of the levels studied in the lumbar enlargement not a single large ventral horn cell is to be seen on one side, while on the other the number is markedly reduced. The cells destroyed by the original inflammatory process have for the most part entirely disappeared, while the relatively few remaining cells are frequently normal as regards their markings, a condition to be expected in a local traumatic process as poliomyelitis may properly be regarded, so far as the nerve cells are concerned. Occasional cells may be seen, showing marked chromatolysis, and distinct dislocation of the nucleus, having the general appearance of cells undergoing the so-called degeneration at a distance, a type of degeneration which might easily occur in a destructive process of this sort. It is often difficult to trace certain processes to a distance from the cell body, and in some instances the dendrites appear as if broken, probably by the violence of the original exudation. There is no sufficient evidence of cell disintegration due to a slowly acting toxic cause. The point of chief interest in the appearances given by the Nissl method is the comparative lack of transitional forms between a complete destruction of nerve cells and wholly uninjured cells.

There is no distinct evidence of the process described by Marinesco as restitution of injured cells, possibly owing to the insufficient time which had elapsed since the beginning of the illness. Swollen cells with abnormally deeply staining chromatin are not visible, although many cells show an unusually definite coloration of the Nissl bodies.

The changes described for the lumbar region extend throughout the cord with essentially unvarying intensity, and therefore require no special comment. In the cervical region a few large cells remain intact and a considerable number of smaller cells, faintly staining and much degenerated, may be

seen on careful search with a high power. The vascular changes are as pronounced here as at other portions of the cord.

Slightly higher, in the lower oblongata, the vascular distention and exudation have almost wholly disappeared. The mid-oblongata at the level of the hypoglossus nucleus shows no abnormality. The cells are well stained and sufficient in number. The upper oblongata, pons, cerebellum and cerebral cortex are normal, beyond an occasional extreme distension of blood vessels, to which no special pathological significance is to be attached. There is nowhere evidence of exudation from the vessels. Beyond the distension of the vessels, especially marked in the cord, the walls show no abnormality. The sciatic nerve is very markedly degenerated. Certain of the bundles have almost completely lost their myeline (Weigert); whereas others remain essentially intact. This observation is of some value as showing the relative arrangement of motor and sensory nerves in the peripheral trunks. It is also of interest that sections stained by Marchi's method show no degeneration of the myeline, probably due to the fact that three months had elapsed since the onset of the disease.

In summarizing the chief alterations observed the following points are to be noted: Essential limitation of the pathological process to the spinal cord; in the cord, chief though not exclusive localization in the ventral horns; evidence of primary inflammation with secondary degeneration and destruction of nerve cells; marked degeneration of peripheral nerves.

The clinical course and pathological anatomy of this case correspond closely to several others which have been reported within the last few years, and to which allusion will later be made.

Case II.—A girl of seventeen, up to that time well and athletic, was taken ill with vague symptoms, referable to her head with some pain about the body; she complained of dizziness and general weakness. This condition persisted until she was forced to take to her bed at the end of about three weeks, with an acute febrile attack, the temperature at one time reaching 103.8. During this acute attack, or immediately following it, a rapid loss of power in the arms and later in the legs developed, which became practically a total paralysis, accompanied by a somewhat sighing respiration.

The patient vomited easily and often; there was retention of urine and feces, necessitating the use of the catheter and en-

ernata. There was also temporarily excessive pain in the legs, of a lancinating character.

Physical examination made soon after the onset of the paralysis showed complete motor disability in both legs and in the right arm. The left arm was also practically helpless, except for some flexion at the elbow and wrist; extension was impossible. The cranial nerves were not involved, nor was the phrenic to a noticeable degree. Sensation was uninvolved, except for a possible slight hyperesthesia of the legs; there were no pains as at first. The deep reflexes were lost; the temperature had returned to normal and the general condition was much improved over what it had been. The urinary and rectal disturbance, however, persisted.

At a second examination, made about a month later, this loss of control of the sphincters had passed; it had not been necessary to use the catheter after the first week of the onset of paralysis. There was in other respects also, some improvement; more motion of the left arm was possible, but it was still very weak. The right arm was slightly movable at the shoulder joint only. The right leg remained absolutely paralytic; likewise the left leg, except for slight movement of the toes. The muscles were flabby and showed evidence of atrophy. Sensation remained essentially unimpaired, and the sharp pain of the earlier stage had entirely disappeared. Respiration was now unaffected, and the mental state was clear.

The patient later, fortunately, came under the treatment of Drs. E. H. Bradford and E. G. Brackett, of Boston, who through assiduous training of the muscles, over a long period of time, were able to bring about a degree of improvement which it is not to be supposed that nature unaided could have done. Nearly two years after the onset of the disease, Dr. Bradford writes that the patient is able to stand and take a few steps with the help of crutches, and that progress had been made during the last six months.

The following case, occurring in a boy shortly before puberty, is of importance as illustrating a cerebral complication or accompaniment of the disease which is not altogether easy of explanation, except through association with an accompanying encephalitis.

Case III—N. A., a boy, fourteen years old, came to the Nerve O. P. D. Massachusetts General Hospital (No. 22,174), March 31, 1902, with the following history: Toward the end of August, 1900, after a bicycle ride of about fourteen miles,

not associated with special fatigue, and after wading a few hours later, he felt chilly; he was not ill that night, but the next day had severe backache and headache. The following day he had considerable pain in the right foot. On waking the next morning, after a good night's sleep, his right leg was paralyzed. That afternoon the left leg began to grow weak and the next morning it also was paralyzed. On this day fever was first noticed, though it had probably existed for several days, and he began to grow somnolent. He rapidly sank into a stuporous condition from which he could not be roused by any ordinary stimuli, and remained so for about eight weeks. He did not speak during this time, except on one occasion, about two weeks after the onset, when he is said to have conversed intelligently for about half an hour. After that he became more stuporous with increased fever. His bowels and bladder acted involuntarily, but he was always able to swallow. There was at no time paralysis of any of the cranial nerves; the father gives an extremely doubtful history of retraction of the head. Recovery from this condition was gradual, with increasingly prolonged intervals of consciousness. The patient remembers absolutely nothing of this period of eight weeks; his mental state is now entirely normal. He had had no suppuration of the ears; and beyond chicken-pox the previous spring and headaches with constipation, he had previously been well. An analysis of the drinking water showed the presence of lead, and a slight amount was also found in the urine.

After recovering from the stuporous condition spoken of above, all four extremities were more or less paralyzed, the legs to such an extent that he has not since been able to stand or walk, and the arms to a less degree. There has been no disorder of the sphincters nor of sensation.

Physical examination at the present time shows the following conditions in detail: General appearance of health: the patient is well grown and of good color. The head and cranial nerves show no abnormality whatever. The pupils are large, equal and respond to light. The fundus shows nothing pathological. The patient has a rachitic chest. All the muscles are soft and many show distinct atrophy. The trapezii and sternomastoids are not involved. Movements of the shoulders are somewhat weak; the muscles of the upper arms are flabby, but individual motions are preserved. The right arm shows greater atrophy than the left. In both arms there is distinct atrophy of forearm muscles on the ulnar flexor side. The hands are similarly atrophic, but more marked on the right. The small muscles of the thumb are particularly involved, permitting but very slight movement on the right. The interossei are some-

what affected. Extension of hands at the wrist is possible. In respiration the movements of the ribs are imperfect. There is some lordosis. Right glutei completely paralyzed; left approximately normal. The legs are much more atrophic than the arms, practically all the muscles taking part. The patient as stated, cannot stand, but creeps with comparative ease, flexing the legs both at hips and knees. In the sitting posture he cannot raise either leg at the hip nor extend the leg on the thigh. If knees are supported, flexion and extension are slightly possible. Abduction and adduction at the thighs imperfect, particularly on the right. All movements of the right foot are abolished; extension of toes of the left foot possible; flexion lost. Slight flexion and extension of the ankle possible. The feet are cold; the right foot somewhat cyanotic.

Reflexes, superficial and deep, are lost; the paralysis is flaccid; there are no contractures.

Electrical examination shows quantitative diminution to both faradism and galvanism, without qualitative change in the muscles examined.

During the past four years and three months at the Out-Patient Neurological Department of the Massachusetts General Hospital, anterior poliomyelitis has been diagnosticated seventy-six times. Of this number ten occurred in persons upward of twelve years of age; five of these eighteen or more years old. In several of these cases, however, the diagnosis permits of doubt, so that, judging from these figures, the percentage of adult cases, uncomplicated by cerebral symptoms, is very small.

Case IV—L. F., twenty-two, unmarried, a school teacher, at nineteen was taken with an illness supposed to be influenza. On the third day of this illness a sudden paralysis of the legs came on which had prohibited walking since. There was no sensory nor sphincter disturbance; there remained practically a complete paralysis of the right leg, and a very marked paresis of the left. There was double toe drop; the skin of the feet was cold and brawny in appearance. Probably much muscular atrophy, but masked by fat. The knee-jerks were absent.

A typical case of poliencephalitis associated with a cervical poliomyelitis occurred during this period in which the cerebral symptoms so far predominated that it is rather to be considered in another category than poliomyelitis.*

*This case will be alluded to later in this paper and reported in detail in another place. See in this connection, Sherman and Spiller: "A Case of Poliencephalomyelitis in an Adult." *Phil. Med. Jour.* v. 734, 1900.

Symptomatology.—The cases described above conform to the generally accepted picture of acute poliomyelitis. Had they occurred in infants or young children, no doubt whatever would have been entertained of the diagnosis. A febrile attack, with general constitutional symptoms, followed by a more or less extensive paralysis of one or more extremities of a purely motor type, rapid in onset, forms a characteristic picture at whatever age it occurs. In spite of an increasing number of clinical and some pathological observations showing conclusively the existence of acute poliomyelitis in the adult there still remains a certain prejudice against the acceptance of the diagnosis, so deeply rooted is the feeling that it is peculiarly a disease of childhood. It is unquestionably a rare affection after the fifteenth year, but no one who has studied the reported cases can for a moment deny that it occurs in characteristic form, and probably with much greater frequency than ordinarily supposed. Bernhardt¹¹ in 1874 reported three cases in men, two of which involved all four extremities. He notes the frequency of this extensive involvement in the adult, an observation made and confirmed by others since. In 1875, Cornil and Lépine¹¹ reported with autopsy a case of relatively slow onset, with characteristic cord changes, which others might have been inclined to regard as a case of so-called Landry's paralysis. Williamson's¹² case was a man of twenty-two, who died five weeks after a sudden paralysis of both arms and legs, without permanent sensory disorder, and in which the autopsy confirmed the diagnosis. Grawitz¹³ narrates the case of a woman of eighteen, with involvement of all four extremities, followed by partial recovery, the paralysis in this case being of somewhat slow onset, occupying several days to reach its maximum. A somewhat similar case in a man of nineteen, followed by death with paralysis of respiration is reported by Niedner¹⁴, without autopsy. Jagić¹⁵ observed a case of primary involvement of the leg, extending to one arm, followed by death in which the similarity to Landry's symptom-complex is noted. Hoppe's¹⁶ cases, although not fatal in outcome, admit of no reasonable doubt in diagnosis, and Caverly's¹⁷ recurring in the famous Rutland, Vermont, epidemic of 1894, are equally beyond suspicion, although no autopsies were obtained. Of special inter-

est on the clinical side are those cases which somewhat arbitrarily have been classed as Landry's paralysis, at times in spite of lesions found post-mortem which would naturally place them in the category of anterior poliomyelitis. Among these are the observations of Bailey and Ewing¹⁸, J. J. Thomas¹⁹ and Greene, Wilson and Rothrock²⁰, all of whom describe lesions (see remarks on pathological anatomy) essentially characteristic of poliomyelitis, and yet classify their cases under the vague heading of Landry's paralysis. The tendency to consider cases of rapidly advancing paralysis, whether fatal or not, and regardless of the pathological findings as Landry's paralysis is very noticeable in much of the best recent work in America. An attempt to fit pathological changes into a preconceived clinical picture usually leads to an unnecessary confusion, and such has been the result here. We have elsewhere²¹ discussed what to us seems the proper attitude to assume toward the complex of symptoms which goes by the name of Landry. We wish, now, merely to reiterate that the clinical course of the disease must not be the sole criterion of its nature. Poliomyelitis is none the less poliomyelitis because it simulates in its clinical course what Landry many years ago described as an acute ascending spinal paralysis. German observers have on the other hand been quick to recognize the occurrence of a form of poliomyelitis in the adult, in which the paralysis has been of relatively gradual onset and often ascending in type. In 1876 Schultze²² reported a case of poliomyelitis with autopsy in which there was a resemblance to a rapid Landry's paralysis. Again in 1883, Schultze²³ writes of two cases under the title of "Ascending Atrophic Paralysis with Fatal Outcome," one in a man of 44. and the other in a man of 30. Immermann²⁴ in 1885 reported an important case with autopsy. The patient, a man of 22, had an ascending flaccid paralysis of the legs, followed by involvement of an arm and later bulbar symptoms. The autopsy showed changes in the ventral horns. Immermann assumes from this case that a form of anterior poliomyelitis exists which corresponds to the clinical picture of Landry's paralysis.* Various

*"Die Landry'sche Paralyse und die acuta Poliomyelitis anterior nur die graduell verschiedenen Bilder eines Krankheitsprocesses darstellen." *Loc. cit.*, p. 305.

other writers on the subject note the fact that in many cases the onset of the paralysis is by no means so stormy as in infants, but they are not thereby induced to exclude them from the general category of poliomyelitis, influenced no doubt by the autopsy findings.

Discussion has also arisen with regard to the differential diagnosis between poliomyelitis of the adult and multiple neuritis. In 1880, Leyden²⁵, in an exhaustive paper, attempted to elucidate the question by a somewhat elaborate classification of the forms in which poliomyelitis may occur. One form he regarded as essentially due to a peripheral neuritis. Very recently Strümpell and Barthelmes²⁶ have again reverted to the matter in much clinical detail, calling attention to the fact that the diagnosis of adult poliomyelitis has decreased with the advent of the study of polyneuritis. These writers refer to Müller's²⁷ monograph on acute atrophic spinal paralysis, in which no case is to be unquestionably regarded as an acute poliomyelitis.

Except in rare instances the differential diagnosis on the clinical side should not present many difficulties provided the term neuritis is used in the sense of an inflammation of the peripheral nerve trunks, and not as another term for neurone degeneration. In the latter case various forms of motor neurone degenerations might easily simulate a poliomyelitis, with or without transient sensory disorder. The following cases are of interest in this connection :

Case V.—W. P., a farmer, nineteen years old, came to the Massachusetts General Hospital in March of this year. About a year and a half before, he had gone to bed feeling well. During the night he had considerable pain in the back, which kept him awake. The following day he had headache, for which he remained in bed. In the afternoon, on attempting to walk, he found that his right leg "gave way" at the knee. For the next two or three days both legs were slightly sensitive to pressure, which persisted in modified form for some weeks. Treatment by electricity and massage did no good, and the right leg gradually decreased in size and became sensitive to cold. Examination a year and half after the onset showed a marked paresis of the right leg. The patient could lift it slightly while sitting, but was wholly unable to extend the leg on the thigh. The sphincters were unaffected. There was no venereal or alcoholic

history; the right knee-jerk was absent; there was no objective disturbance of sensation.

Case VI.—A man of twenty-nine, a temporary patient at the Massachusetts General Hospital, said that ten years before he had had "rheumatism in his knees," extending to his hips, by which he was crippled for six months. The right leg apparently recovered, but the left has remained weak. There was wasting below the knees, and a complete paralysis of the left foot and toes for a year. The general health was good, and at the time of examination there were no sensory disturbances.

Whatever doubt there may be as to the proper interpretation of these cases, in both of which the diagnosis of poliomyelitis was made, it will be generally admitted that cases I and II are typical of what has ordinarily been called poliomyelitis, and certainly could not be brought into the category of polyneuritis.

Temporary disorders of sensation, often of an extreme degree of severity, have frequently been described in the early stages of the disease, no doubt to be explained by the involvement of portions of the dorsal horns in the inflammatory process. This should never lead to an error in the clinical diagnosis, particularly after the acute onset has passed.

Pathological Anatomy.—As our study of the pathological anatomy of the nervous system progresses, it is becoming increasingly clear that we must continually widen the bounds of what we have hitherto regarded as individual diseases. This is particularly true of the group of lesions it is now necessary to consider in connection with a process apparently so clearly defined as poliomyelitis. This disease has, perhaps, occupied a somewhat more stable position than many other affections of supposed definite organic basis, but the time has apparently come for a clearer recognition of its relation to various cerebral and peripheral disorders of so dissimilar a character clinically as peripheral neuritis and acute encephalitis or Landry's symptom-complex and acute ophthalmoplegia. Is poliomyelitis occurring either in the child or adult the same disease as these, and due to the same general causes, or are we dealing with totally dissimilar affections both from the pathological and etiological, as well as from the clinical, point of view? This question may, at present, be answered only in part,

but much light has been thrown upon it by various recent pathological reports.

Regarding poliomyelitis certain facts are now generally accepted :

1. That it is an infection of undetermined character, limited to the region of the ventral horns of the cord.

2. That the pathological alterations found are consistent with the theory of a primary inflammation and a secondary destruction of nerve-cells.

3. That the ultimate changes may closely resemble or be identical with those observed in primary degenerations of nerve elements.

4. That the symptoms resulting tend to be of sudden onset, capable of some degree of improvement, motor in type and unassociated with permanent sensory disturbance.

Even these fundamental statements have by no means been universally accepted, due, no doubt, in great measure to the widespread influence of Charcot. Following the earlier writers on the subject, Heine, Cornil, Duchenne, Prevost, Cuming and others,* Charcot and Joffroy²⁹, reporting a case of poliomyelitis twenty-five years after its onset, advanced the theory that the ventral nerve-cells are specifically and primarily involved, differing only from progressive muscular atrophy in being attacked more suddenly. With the material at their disposal this supposition was entirely natural. It is, however, somewhat remarkable that certain writers should later have adhered to this view, in spite of much better opportunities for study. Among these is Rissler²⁹, who had the exceptional opportunity of studying microscopically five cases, three of which were very recent, occurring in the epidemic described by Medin³⁰. For reasons which are not altogether obvious, Rissler concludes that in the recent cases, in spite of cellular exudation in combination with degeneration of nerve-cells, the primary affection is of the nerve-cells. In 1893 von Kahlden³¹, unconvinced by many apparently conclusive papers maintaining the existence of a primary inflammation, reverts again to primary degeneration of nerve-cells as the essential lesion. He bases

*See Bibliography.

this opinion upon the examination of material from persons in whom the paralysis had been of long standing. In decided opposition to this point of view stands an array of painstaking articles, of which the following are the most important: Roger and Damaschino²², Schultze²³, Turner²⁴, Bramwell²⁵, Drummond²⁶, Williamson²⁷, Goldscheider²⁸, Siemerling²⁹. All of these writers and others, reference to whose work will be found in the bibliography, are united in regarding the primary lesion as inflammatory, brought about by an unknown etiological factor, acting in the general distribution of the ventral arteries of the cord. With certain variations in the details of the pathological findings, recent observers are essentially united in this point of view. It is easy to understand that the appearances after the lapse of years might closely simulate those found in processes of quite a different origin; for example, progressive muscular atrophy. The question can only be decided by the examination of relatively recent cases, of which there are now enough at hand to form a final judgment. A matter of much more vital interest, at present, is the determination of the problem whether poliomyelitis represents a disease *sui generis*, or whether it has intimate relationship with others, differing from them only in degree and location, and consequently in symptomatology. A study of these questions is best made in the adult form, since the diseases which poliomyelitis may simulate occur more frequently in adults than in children. Considered from the pathological side, omitting for the present any question of etiology, the relation of poliomyelitis to multiple neuritis, Landry's paralysis, myelitis, encephalitis, poliencephalomyelitis, and progressive muscular atrophy needs to be studied.

Multiple Neuritis:—On the clinical side the possibility of confusion in the diagnosis between poliomyelitis and polyneuritis has long been recognized and discussed. Allusion has already been made to the important papers of Leyden and Strümpell and Barthelmes bearing on this point. However difficult, at times, the clinical diagnosis may be, the histological changes in the two conditions would hardly admit of question if we regard the lesion of poliomyelitis as in all cases a primary inflammation of the ventral horns within a definite arterial area.

If the term neuritis be applied to peripheral neurone degenerations manifesting themselves only in the axones, no confusion could arise in the histological appearances; if the peripheral nerves show evidence of inflammation without destructive lesions in the ventral horns there is likewise no difficulty. If, on the other hand, inflammatory changes of the ventral horns occur with consequent changes in peripheral nerves, the anatomical diagnosis of poliomyelitis is apparent. So far as we are aware no case has been published in which a coincident inflammation of ventral horns and peripheral nerves has occurred, indicating a common origin. In the absence of such a case it is fair to assume that the etiology of the two conditions is essentially different, a point to which we shall revert later. A mere difference in the degree of strength of the irritant, is not sufficient to account for the difference in location of the consequent inflammatory reaction. Redlich⁴⁰ on the other hand inclines to the view that poliomyelitis and polyneuritis are the same affection with different localizations.

Landry's Paralysis:—As has been suggested, the tendency to find a pathological anatomy for a group of symptoms resembling in some respects poliomyelitis has led to relatively frequent descriptions of the lesions of poliomyelitis under the heading of Landry's paralysis. Judging from the illustrations, as well as the description of the course of the disease and the lesions, Bailey and Ewing's⁴¹ case is of this character. In this case there was sudden loss of power in both legs, followed the next day by paralysis of one arm and paresis of the other. Sensation was unaffected; the reflexes were lost; there was diminished faradic response in the paralyzed muscles. On the clinical side such a history corresponds perfectly to adult poliomyelitis with cerebral involvement and very imperfectly to the symptom-complex described by Landry. The gradual invasion of muscle groups without electrical changes, supposed to be characteristic of Landry's paralysis did not occur. On the pathological side "the lesion consisted in intense congestion of all the blood-vessels especially of the ramifications of the central branch of the anterior spinal artery," and again, "at some levels congestion and exudation were so intense that nothing could be

distinguished but the round-cell infiltration and the detritus of neuroglia and ganglion cells." Various degenerative changes in nerve-cells were also, naturally, found. These are unquestionably the exact lesions of poliomyelitis as described frequently in children by entirely competent observers, and less often in adults. They cannot be brought into the category of Landry's paralysis, unless that vague term be enlarged to include poliomyelitis, which seems manifestly undesirable. Thomas⁴² Case I is likewise a case of acute anterior poliomyelitis in the adult, described in his paper, entitled "Two Cases of Acute Ascending Paralysis with Autopsy." The diagnosis is so made in the description of the case, and a study of the sections, with which Dr. Thomas has kindly provided me, leaves no doubt of the fact that it is not properly classified under Landry's paralysis. A similar case of much interest has been published by Greene, Wilson and Rothrock⁴³ as "A Case of Landry's Paralysis." There was high temperature, followed by sudden paralysis of legs, quickly extending to arms. Death, after forty-one days of artificial respiration. Microscopic examination showed a violent inflammation in the ventral horns, extending the entire length of the cord, leading the authors to speak of the lesion as a "parenchymatous ascending acute poliomyelitis." In 1875 Webber⁴⁴ in a paper on myelitis deprecated the use of the term acute ascending paralysis as misleading. In this connection articles by Schultze⁴⁵, Immermann⁴⁶, Jagić⁴⁷, Mills and Spiller⁴⁸, as well as those quoted above, are of much interest. As expressed in a former paper⁴⁹, it seems altogether desirable to abide by pathological findings, unless a better criterion be offered. If this had been done, we should certainly have heard much more of the supposedly rare poliomyelitis of the adult.

Myelitis occurring in its typical form as a more or less complete transverse lesion of the cord of inflammatory character should not often be confused with, or mistaken for, poliomyelitis. That transitional forms of inflammation may occur must be conceded. It has long been recognized that the lesions of poliomyelitis may extend beyond the confines of the ventral horns, but the greatest intensity of the process has usually been fairly

limited to those areas (Roger and Damaschino⁵⁰, Turner⁵¹, Eisenlohr⁵², Rissler⁵³, Goldscheider⁵⁴). A very important case in this connection is one described at length by J. J. Putnam⁵⁵ in 1883. The patient was a woman of twenty-two, who was suddenly attacked with disorders of sensation, followed by muscular wasting, the right arm and hand being especially affected. A diagnosis of adult poliomyelitis was made. Microscopic examination of the cord showed that both ventral and dorsal horns were involved, the lumbar cord being less affected than other regions. The blood vessels were thickened, deeply congested, and there was extravasation of cells. The inflammation was acutest in the white matter, many of the fibers of which showed degenerative changes. The ventral nerve roots were degenerated to a greater degree than the dorsal. There was a moderate amount of leptomeningitis. Putnam concludes from the pathological findings that the disease might better be designated, "diffuse myelitis." It is a matter of regret that the peripheral nerves were not examined. From our present point of view the case could with difficulty be placed in the category of acute poliomyelitis. It illustrates better than any case of which we have knowledge, the extension of an inflammation, very similar in general character to that which occurs in poliomyelitis, over a considerable area of the cord, and goes far toward proving the existence of transitional forms of disease. The coincident occurrence of a meningitis is also important.

Encephalitis and Allied Conditions.—In many cases in which a poliomyelitis is the predominant feature in the clinical picture, cerebral involvements of more or less severity have been described, and many of them confirmed by autopsy. In Case III of this paper, an unmistakable poliomyelitis was associated for about two months at the onset of the disease with a profound disturbance of consciousness, without involvement of cranial nerves which finally disappeared, leaving no defect. The possibility of a mild encephalitis must certainly here be considered, though we have no means of proving its existence. Involvements of cranial nerve nuclei have been reported many times as poliencephalitis, superior or inferior, or ophthalmoplegia, without involvement of the cord. That the character of these

various processes is similar is shown by the fact that many carefully studied cases of poliomyelitis, especially in the adult, give evidence of a slighter, but perfectly definite inflammatory reaction throughout a part or whole of the brain stem. Such observations have been made by Gombault⁵⁶, Rissler⁵⁷, Redlich⁵⁸, Greene, Wilson and Rothrock⁵⁹, Jagić⁶⁰, Bülow-Hansen and Harbitz⁶¹, and on the clinical side notably by Caverly⁶², and Medin⁶³, who studied the two best recognized epidemics of the disease which have hitherto occurred. In these cases the cord affection was, for the most part, predominant, and what changes were found in the oblongata were regarded as subordinate in intensity. Bailey and Ewing's case of Landry's paralysis, to which we have previously alluded, is of this type; in that case lesions were also found in the cerebellum. A still more definite connecting link between the cerebral and spinal affections is to be found in the rare cases of poliiencephalomyelitis, a few of which have been carefully reported with subsequent autopsy. Under the heading "A Case of Poliiencephalomyelitis in an Adult, Presenting the Clinical Picture of Landry's Paralysis, and Fatal in Thirty-eight Hours After First Definite Motor Symptoms," Sherman and Spiller⁶⁴ have recently reported a characteristic instance of combined cord and brain lesions. The patient, a man of twenty-one, was taken with headache, vomiting and slight rise of temperature. Two days later walking became difficult through weakness of the legs; the next day respiratory paralysis set in followed by weakness of the arms, the legs being almost completely paralyzed. The mind remained clear and sensation was unaffected. Death from paralysis of respiration. The pathological examination showed organisms of the colon group from liver and kidneys; engorgement of vessels of the cord in all regions; cellular infiltration of gray matter, meninges and spinal roots; less in white matter and less in dorsal than ventral horns; hemorrhages in spinal gray matter; degeneration and loss of ventral nerve cells; ventral spinal roots normal. The oblongata was similarly affected, but to less degree; degenerative changes in nucleus ambiguus; vessels of pons, peduncles and cortex distended, but with slight perivascular infiltration. From a study of this and related cases, Spiller

concludes that Landry's paralysis may be due to poliomyelitis; that poliomyelitis may be due to a variety of organisms, and that inflammation occurs in the meninges and dorsal horns as well as in the ventral horns; that meningitis is not uncommon; that poliomyelitis in the adult is the same disease as in the child; that it bears a close relationship to non-purulent encephalitis and to poliencephalitis superior. With these deductions we must essentially agree.

The chief interest of this valuable study of Spiller's is the demonstration that widespread inflammation of the central nervous system may occur, leading even to a meningitis, and giving rise chiefly to motor disorders not confined to the cord. The analogy to uncomplicated poliomyelitis is apparent, and the differences are significant of the wide association poliomyelitis may have with inflammatory disorders of other portions of the nervous system.

The following case is a striking clinical example of this fact:

Case VII.—A man of twenty-seven, formerly able-bodied, after an attack of influenza, was paralyzed in both arms. This paralysis improved somewhat, leaving a high degree of muscular atrophy, without disordered sensation. Associated with this paralysis of the arms was a complete paralysis of the external rectus on the right; a partial paralysis on the left; paralysis of the right motor fifth nerve, with some disorder of sensation in the distribution of the sensory branches; paralysis of all branches of the right seventh; deafness on the right; hypoglossal and vago-glossopharyngeal group also involved to a certain degree. The patient when last seen was improving slightly.

In this case there was clearly an inferior poliencephalitis with a cervical poliomyelitis.

Sub-acute and Chronic Poliomyelitis; Progressive Muscular Atrophy.—That poliomyelitis in the adult may take several days for its complete development has already been stated; a more sudden onset than this is rare. This is, no doubt, to be explained by the greater natural resistance of the adult nervous system to toxic influences than the child's. Even a very acute meningitis or pneumonia takes a certain time for its development, and there is no reason whatever why the same should not be true in the ventral horns of the cord. The virulence of

the infection must influence the rapidity of development of the symptoms. Before any adequate explanation of this may be expected we must have a far more detailed knowledge of etiology than is now at hand. In the meantime on the clinical and pathological side a few cases have been described on such good authority that the types of sub-acute and chronic poliomyelitis have been introduced into the nomenclature. In 1888, Oppenheim⁶⁵ described a case of three years' duration in a woman of about fifty, in which death finally resulted in consequence of a gradual increasing paralysis, beginning in one arm. There was loss of ventral nerve-cells, without atrophy of ventral roots or peripheral nerves. The lesions were sharply localized in the ventral horns. Before this in 1882, Eisenlohr⁶⁶ expressed himself as confident of the existence of a true sub-acute and chronic poliomyelitis. In 1893 Goldscheider⁶⁷ in an exhaustive paper discusses the subject of chronic poliomyelitis, regarding its inflammatory character as doubtful. In general it would appear hardly necessary to separate these cases of gradual onset and fatal termination from the group of progressive muscular atrophy to which they correspond much more closely than to poliomyelitis as ordinarily understood. In the absence of evidences of inflammation this attitude is still further justified, admitting always the possibility of transitional forms which must ultimately be classified on an etiological basis.

From the foregoing discussion of the pathological anatomy of poliomyelitis, it must be evident that the disease, as seen especially in the adult, represents simply a favorite location of an inflammatory process. Sufficient evidence is now at hand to prove that whether cerebral or spinal, the acute inflammations are identical in their histological manifestations, and that we are forced to the conception of poliomyelitis merely as one of a series of more or less sharply localized inflammations.

Etiology:—Speculations regarding the cause of these widespread inflammatory reactions affecting at times every part of the nervous system, are as yet somewhat premature. It is, however, becoming more and more evident that some working basis which goes beyond the findings of the microscope is advisable,

provided it does not conflict with ascertained knowledge. Such an attempt to throw light on the complex relationships of the affections we have been considering, has recently been made by Strümpell and Barthelmes in their paper to which we have alluded: "Ueber Poliomyelitis acuta der Erwachsenen und über das Verhältniss der Poliomyelitis zur Polyneuritis."⁶⁸ After speaking of the difficulty in establishing a sharp distinction between degeneration and inflammation, and discussing the general theories of the toxic causes of pathological processes, these writers offer the following etiological classification of the idiopathic atrophic paralyses:

1. The local acute infectious inflammation of a peripheral nerve—acute local neuritis.
2. The local acute infectious inflammation in the region of the ventral horns of the cord—acute local poliomyelitis of children and adults.
3. The hematogenous—toxic motor nerve-degeneration—the so-called acute polyneuritis in its different forms of origin and distribution.
4. The acute, sub-acute and chronic exogenous (toxic?) degenerations of peripheral motor neurones, including the motor spinal ganglion-cells—usually hitherto known as "poliomyelitis," sub-acute and chronic.
5. The endogenous progressive atrophy of motor neurones—neurotic and spinal progressive muscular atrophy and associated conditions (amyotrophic lateral sclerosis, etc.)

Such a classification, imperfect as it must necessarily be, has the merit of placing what exact knowledge we have on a more definite foundation, laying stress on the association of diseases, apparently dissimilar rather than in exaggerating their superficial clinical differences. The nature of the toxemia, and the reasons for its selective action remain wholly beyond the field of our present knowledge. It is a possible assumption and in a measure, at least, justified by the facts, that the striking differences between degeneration on the one hand (progressive muscular atrophy), and violent inflammations on the other (acute poliomyelitis), lie in the intensity as well as in the character of the exciting toxic cause plus the vulnerability of the affected

individual. According to this grouping likewise, adult poliomyelitis simply occupies one position in a wide series of related conditions.

Conclusions:—The following conclusions as a practical clinical guide and as a working basis for further study seem justified.

That adult poliomyelitis is a well-marked clinical affection, characterized by initial fever, rapid onset of usually extensive paralyzes, motor in type, with a tendency toward recovery, though often resulting fatally, from respiratory paralysis. That the disease has frequently been confused with multiple neuritis and so-called Landry's paralysis.

That its anatomical basis is a primary inflammation in the distribution of the ventral arteries of the cord, leading to a destruction of nerve-cells.

That this inflammation is rarely sharply limited to the ventral horns, but extends into the dorsal gray matter, the surrounding white matter and at times into the oblongata.

That there is no sharp line to be drawn between these lesions and still more extensive ones giving rise to totally different clinical pictures *e.g.*, encephalitis, poliencephalitis, poliencephalomyelitis.

That, therefore, anatomically the disease is much less sharply characterized than it is clinically. That its final place must be determined by a study of its cause or causes, as related to various other degenerations and inflammations of the nervous system.

That from the practical point of view it is well to consider those cases poliomyelitis which show a flaccid atrophic paralysis of sudden onset, with definite anatomical changes limited to the ventral horns of the cord and their immediate vicinity.

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- ⁶⁶Neurolog. Centbl., i, 409, 1882.

^a*loc. cit.*^a*loc. cit.*SUMMARY OF CASES OF POLIOMYELITIS REPORTED IN
THE LITERATURE.

In the following list of titles the important literature of poliomyelitis is given, with special reference to its occurrence in the adult, and to the pathological anatomy both in adults and children, together with certain related collateral papers. No attempt has been made to collect minor clinical reports. Various important papers bearing indirectly on the subject of poliomyelitis, especially in the adult, have recently appeared under the title of Landry's Paralysis, or Acute Ascending Paralysis. These are referred to in the foregoing text.

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Heine: "Beobachtungen über Lähmungszustände der unteren Extremitäten." Stuttgart, 1840.

Also: "Ueber spinale Kinderlähmung," Stuttgart, 1860.

Cornil, V.: "Paralysie infantile; cancer des seins; autopsie: altérations de la moelle épinière, des nerfs et des muscles; généralisations du cancer." *Comptes Rend. de la Soc. de Biol.*, 187, 1863.

The first case reported with autopsy; onset in child of 2; death at 49. Loss of nerve cells and atrophy of muscles noted.

Duchenne (de Boulogne) fils: "De la paralysie atrophique graisseuse de l'enfance." *Arch. gén. de Méd.* II, 28, 1864. Clinical report of cases. Teeth regarded as important in etiology.

Prevost: "Observation de paralysie infantile; lésion des muscles et de la moelle." *Comp. rend. de la Soc. Biol.*, 215, 1865.

Woman of 78; poliomyelitis in infancy. Loss of nerve cells; overgrowth of neuroglia, asymmetry of cord; reduction in size of left ventral horn.

Johnson and Clarke: "On a Remarkable Case of Extreme Muscular Atrophy with Extensive Disease of the Spinal Cord. *Medico-chirurg. Trans. Lond.*, li, 250, 1868.

Man of 32, the disease dating from first year. Good description of pathological changes; artefacts misinterpreted. Opinion advanced that atrophy of cells is the cause of changes in the muscles.

Cuming: "Case of Extensive Paralysis from Morbid Condition of the Spinal Cord, Probably Congestion." *Dublin Quart. Jour. of Med. Sciences*, xlvii, 471, 1869.

Case without autopsy, in man of 40; possible alcoholic neuritis.

Charcot, Joffroy: "Cas de paralysie infantile spinale avec lésions des cornes antérieures de la substance grise de la moelle épinière." *Arch. de Physiol.* iii, 134, 1870.

Poliomyelitis at 7, death at 40, atrophic changes in ventral horns; degeneration of ventral nerve roots. The theory advanced that ventral nerve cells are specifically and first involved, as in progressive muscular atrophy, but more suddenly.

Parrot, Joffroy: "Note sur un cas de paralysie infantile." *Arch. de Physiol.* iii, 309, 1870.

Autopsy, showing loss of nerve cells and atrophy of one ventral horn with vascular infiltration.

Roger, Damaschino: "Recherches anatomo-pathologiques sur la paralysie spinale de l'enfance." *Gaz. méd. de Paris*, xxvi, 457, 480, 505, 541, 576; 1871.

Roger, Damaschino: Same title, *Comp. rend. de la Soc. Biol.* 49, 1871.

Elaborate paper, with a review of previous literature. Three cases in children reported with autopsies 2, 6 and 13 months after onset. General conclusions that lesion is primary in the cord, and secondary in muscles and nerves; that the process is an inflammatory softening of the nature of a myelitis.

Förster: *Jahrbuch f. Kinderheilk. Neue Folge*, V, 118, 1872.

Brief statement of two autopsies in infants; changes in peripheral nerves in one, and in cells and nerves in the other.

Chalvet: *Thèse de Paris*, 1872.

Gombault: "Note sur un cas de paralysie spinale de l'adulte, suivi d'autopsie." *Arch. de Physiol.*, v, 80, 1873.

First adult case with autopsy reported. Woman of 67, typical sudden onset with fever followed by extensive paralysis of the extremities; death at end of 7 years. Post-mortem showed involvement of ventral horns, some degeneration of ventral roots, and slight involvement of oblongata; lesions not regarded as primarily inflammatory.

Petitfils: "Considérations sur l'atrophie aiguë des cellules motrices (Paralysie infantile spinale; paralysie spinale aiguë de l'adulte)." *Paris*, 1873.

Roth: "Anatomischer Befund bei spinaler Kinderlähmung." *Virchow's arch.*, lviii, 263, 1873.

Child of 2, death 11 months after onset. Usual changes in ventral horns; dorsal horns and white matter slightly involved.

Bernhardt, M.: "Ueber eine der spinalen Kinderlähmung ähnliche Affection Erwachsener." *Arch. f. Psych.* iv, 370, 1874.

Three typical cases in adults; no autopsies. Allusion to the fact that the four extremities are usually affected in the adult.

Frey: "Ueber temporäre Lähmungen Erwachsener, die den temporären Spinallähmungen der Kinder analog sind und von Myelitis der Vorderhörner anzugehen scheinen." *Berl. klin. Woch.*, xi, 3, 13, 28, 1874.

Clinical report of cases of temporary paralysis, with reference to observations of Kussmaul, *Deutsch, Arch. f. klin. Med.*, i, 506, 1866.

Frey: "Ein Fall von subacuter Lähmung Erwachsener—wahrscheinlich Poliomyelitis anterior subacuta." *Berl. klin. Woch.*, xi, 549, 566, 1874.

Erb: "Ueber acute Spinallähmung (Poliomyelitis anterior acuta) bei Erwachsenen, und über verwandte spinale Erkrankungen." *Arch. f. Psych.* v, 758, 1874.

Valuable clinical paper with report of seven cases. Objection raised to the diagnosis "acute ascending paralysis," in many cases probably poliomyelitis.

Webber, S. G.: "A Contribution to the Study of Myelitis." *Proc. Am. Neurolog. Ass'n*, 55, 1875.

Alludes to involvement of white matter in poliomyelitis. Deprecates use of term, "acute ascending paralysis."

Leyden: "Beiträge zur pathologischen anatomie der atrophischen Lähmung der Kinder und der Erwachsenen." *Arch. f. Psych. u. Nervenkrankh.*, vi, 271, 1875.

Four cases reported with late autopsies; one case without autopsy, and others quoted. Various pathological processes described, the identity of which is not definitely made out.

Cornil, Lépine: "Sur un cas de paralysie générale spinale antérieure subaiguë, suivi d'autopsie." *Gaz. med. de Paris*, No. 11, 127, 1875.

Man of 27, gradual onset, so-called subacute poliomyelitis. Alterations found in cord.

Schultze, F.: "Zur Lehre von der spinalen Kinderlähmung und der analogen Lähmung der Erwachsenen." *Virchow's Arch.* lxxviii, 128, 1876.

Onset at 3; death at 23. Changes in lateral tracts and Clarke's columns, in addition to usual alterations, believed to be the result of an inflammatory process. A second case, with autopsy, resembling in early course a rapid Landry's paralysis.

Dejerine: "Note sur deux cas de paralysie infantile." *Le Prog. méd.* vi, 423, 1878.

Two cases with autopsy, in children, believed to confirm Charcot's view of the parenchymatous nature of the disease.

Taylor, F.: "Spinal cord from a Case of Infantile Paralysis."

Trans. Patholog. Soc. Lond., xxx, 197, 1879. Description of usual changes.

Turner, F. C.: "A Portion of the Spinal Cord, with Drawings and Microscopical Specimens, from a Case of Acute Anterior Poliomyelitis in a Child, Fatal within Six weeks from the Onset." *Trans. Patholog. Soc. Lond.*, xxx, 202, 1879.

Child of 2½; typical inflammatory changes found; some involvement of dorsal horns.

Humphrey, H.: "Case of Infantile Paralysis." *Trans. Patholog. Soc. Lond.*, xxx, 211, 1879.

Case with autopsy in a child; duration of disease about 2 years.

Müller, F.: "Die acute atrophische Spinallähmung der Erwachsenen." Stuttgart, 1880.

Eisenlohr: "Zur Pathologie und pathologischen Anatomie der spinalen Kinderlähmung." *Deutsch. Arch. f. klin. Med.*, xxvi, 557, 1880.

Two cases, infants; autopsies 6 and 12 months after onset. Typical lesions; slight involvement of dorsal horns and white matter.

Rank: "Zur Lehre von der Poliomyelitis anterior acuta adultorum." *Deutsch. Arch. f. klin. Med.*, xxvii, 129, 1880.

Two cases, without autopsy; elaborate electrical examinations. Summary of knowledge up to that time.

Leyden: "Ueber Poliomyelitis and Neuritis." *Ztschft. f. klin. Med.* i, 400, 1880.

Important and exhaustive paper. Attempt to differentiate three forms of the disease, one of which is a peripheral neuritis.

Sange: Thèse de Paris, 1881.

Bramwell, B.: "Microscopical Preparations and Drawings Demonstrated at Meeting of Med. Chirurg. Soc. of Edin. of Pathology of Infantile Paralysis." *Edin. Med. Jour.*, xxvi, 745, 1881.

Well illustrated paper, showing characteristic changes in a child's cord.

Eisenlohr: Poliomyelitis anterior subacute cervicalis circumscripta beim Erwachsenen." *Neurolog. Ctbltt.*, i, 409, 1882.

Man of 52; slowly progressing palsy of five years' standing. Post-mortem, cord showed atrophy of ventral horn cells. E. is positive of existence of true subacute and chronic poliomyelitis.

Putnam, J. J.: "Examination of the Spinal Cord in a Case of Poliomyelitis of the Adult, of Two months' Standing." *JOURNAL OF NERVOUS AND MENTAL DISEASE*, No. 1, 14, 1883.

Important case; probably better classed as a "diffuse myelitis." [See text of this paper.]

Archambault, Damaschino: "Récherches cliniques et anatomo-pathologiques sur un cas de paralysie spinale de l'enfance, avec autopsie au

vingt-sixième jour de la maladie." *Rev. mensuelle des mal. de l'enfance*. I, 63, 1883.

"Red softening" in ventral horns.

Sahli, H.: "Zur Lehre von der spinalen Localization. Sectionsbefund bei einer alten Kinderlähmung mit eng localisierter Atrophie." *Deutsch. Arch. f. klin. Med.*, xxxiii, 360, 1883.

Schultze: "Ueber aufsteigende atrophische Paralyse mit tödtlichem ausgange." *Berl. klin. Woch.*, xx, 593, 1883.

A case of subacute onset in a syphilitic of 44; death in 6 months; no autopsy. A second case of insidious onset in a man of 30, death with increasing motor weakness in 8 months. No autopsy. Interesting discussion of Landry's Paralysis.

Money: "The Spinal Cord of a Recent and of an Old Case of Infantile Palsy." *Trans. Patholog. Soc. Lond.*, xxxv, 45, 1884.

Two cases, with unusual changes post-mortem. Fanciful theory offered in explanation of the alterations.

Drummond, D.: "On the Nature of the Spinal Lesion in Poliomyelitis Anterior Acuta, or Infantile Paralysis." *Brain*, viii, 14, 1885.

Child of 5; death 6 or 7 hours after onset. Vascularity of ventral horns, but not sharply confined to them; minute hemorrhages; free leucocytes; nerve cells swollen, granular and ill-defined.

Immermann: "Ueber Poliomyelitis acuta und Landry'sche Paralyse." *Neurolog. Ctblt.* iv, 304, 1885.

Man of 22: ascending motor paralysis of the clinical type of Landry's Paralysis. Death; inflammation of ventral horns only.

Friedländer, C.: "Ueber Verkalkung der Ganglienzellen." *Virchow's Arch.*, lxxxviii, 84, 1888.

Three cases with autopsy, one in an adult. Finds a process of calcification of nerve cells which is regarded as a constant change in acute poliomyelitis. See also Virchow's *Arch.*, xi, 620 and 1, 304.

Rissler, J.: "Zur Kenntniss der Veränderungen des Nervensystems bei Poliomyelitis anterior acuta." *Nordiskt med. arkiv.*, xx, No. 22, 1, 1888.

Five cases, with autopsies, 3 early, 2 old, 1 an adult with death on the eighth day. Conclusion that in acute cases there is cellular exudation and degeneration of nerve cells, but, agreeing with Charcot, that the cellular changes are primary. A long, unnecessarily tedious, but very important paper.

Oppenheim: "Ueber die Poliomyelitis anterior chronica." *Arch. f. Psych.*, xix, 318, 1888.

Gradual motor paralysis in a woman of 53, increasing over a period of three years. Loss of ventral nerve cells, without corresponding atrophy of ventral nerve roots and peripheral nerves. Important case in connection with so-called chronic poliomyelitis.

Kawka: Halle Dissertation, 1889.

Joffroy, Achard: "Contribution à l'anatomie pathologique de la paralysie spinale aigue de l'enfance." *Arch. de méd. expériment.*, i, 57, 1889.

Two cases of poliomyelitis in infancy; death in old age. Typical lesions, including changes in peripheral nerves, muscles and bones.

Rosenberg: Heidelberg Dissertation, 1890.

Williamson: "The Early Changes in the Spinal Cord in Acute Anterior Poliomyelitis of the Adult." *Med. Chron.*, Manchester, xii, 454, 1890.

Man of 22; death at end of five weeks. Inflammatory changes in ventral horns. No microorganisms found.

Medin: "Ueber eine Epidemic von spinaler Kinderlähmung." *Verhandl., x, Med. Cong. Berlin, II, Abt. vi, 37, 1891.*

Epidemic in Stockholm.

Also: *Hygiea*, xlii, 657, 1890, and abs. in *Neurolog. Ctbltt.*, 397, 1891.

Oppenheim: "Zur Pathologie der chronischen atrophischen Spinal-lähmung." *Arch. f. Psych.*, xxiv, 758, 1892.

Von Kahlden: "Ueber Entzündung und atrophie der Vorderhörner des Rückenmarks." *Ziegler's Beiträge*, xiii, 113, 1893.

Reversion to Charcot's view of primary change in nerve cells.

Goldscheider: "Ueber Poliomyelitis anterior." *Deutsch. med. Woch.*, xix, 441, 1893.

Goldscheider: "Ueber Poliomyelitis." *Ztschrift. f. klin. Med.*, xxiii, 494, 1893.

Covers ground of former paper more completely. Opposes Charcot's view but regards inflammatory character of chronic poliomyelitis as doubtful. Best review of the whole subject and allied conditions up to this date.

Lippmann: "Poliomyelitis anterior." *Deutsch. med. Woch.*, xix, 823, 1893. Discussion of Goldscheider's first paper, with report of a case in a child, with autopsy.

Dauber: "Zur Lehre von der Poliomyelitis anterior acuta." *Deutsch. Ztschft. f. Nervenheilk.* iv, 200, 1893.

Case of a child; autopsy, with inflammatory changes in cord.

Redlich: "Beitrag zur pathologischen anatomie der Poliomyelitis anterior acuta infantum." *Wien. klin. Woch.*, vii, 287, 1894.

Infant; death in ten days; extensive inflammatory changes. Suggests that poliomyelitis and polyneuritis are same affection, with different localizations.

Siemerling: "Zur pathologischen Anatomie der spinalen Kinderlähmung." *Arch. f. Psych.*, xxvi, 267, 1894.

Two acute cases in infants; usual inflammatory changes found, with secondary nerve cell alterations.

Caverly: "History of an Epidemic of Acute Nervous Disease of Unusual Type." *N. Y. Med. Rec.*, xlv, 673, 1894.

A revision of this paper was later published in pamphlet form with the title: "History of an Epidemic of Acute Anterior Poliomyelitis."

In this epidemic the farm animals were also attacked. There were about 125 cases, chiefly in children; the brain was frequently involved. There were no autopsies.

Mund: Erlangen Dissertation, 1897. Same case as reported by Strümpell in 1900.

Grawitz: "Ein Fall von Poliomyelitis anterior subacuta mit Zwerckfellohnmung bei einer Erwachsenen." *Berl. klin. Woch.*, xxxiii, 245, 1896.

Woman of 18, involvement of all extremities, of rather gradual onset. The patient did not die.

Bicknel: "Ein Fall von acuter Poliomyelitis beim Erwachsenen unter dem Bilde der aufsteigenden Paralyse."

Bonn: Dissertation, 1898.

Edward: Thèse de Paris, 1898.

Niedner: "Ein Fall von Poliomyelitis Acuta der Erwachsenen." *Münch. med. Woch.*, xl, 566, 1898.

Previously healthy man of 19; sudden onset; death in three days; no autopsy.

Matthes: "Sectionsbefund bei einer frischen spinalen Kinderlähmung." *Deutsch. Zeitschrift f. Nervenheilk.*, xiii, 331, 1898.

Infant; death in eight days. First description of changes by use of Nissl Method.

Schultze: "Zur Aetiologie der Acuten Poliomyelitis." Münch. Med. Woch. xlv, 1197, 1898.

Child of five;; possible coincident meningitis and poliomyelitis. Weichselbaum diplococcus found in cerebro-spinal fluid; no autopsy.

Jagić: "Zur Kenntnis der acuten Poliomyelitis der Erwachsenen" (Acute aufsteigende Spinallähmung). Wien. med. Woch., xlix., 394, 1899.

Man of 28, simulation of Landry's Paralysis; inflammatory changes of cord and oblongata.

Bülow-Hansen, Harbitz: "Beitrag zur Lehre der acuten Poliomyelitis." Ziegler's Beiträge, xxv, 517, 1899.

Three children in same family, two deaths with autopsy and usual findings.

Dercum: "Note on a Case of Acute Poliomyelitis in Which the Cerebro-spinal Fluid Obtained by a Quincke Puncture contained a diplococcus, resembling the diplococcus of Sternberg." JOURNAL OF NERVOUS AND MENTAL DIS., xxvii, 116, 1900.

Hoppe: "Poliomyelitis anterior acuta adultorum." Jour. Am. Med. Ass'n, xxxiv., 80, 1900.

Report of two cases observed clinically.

Sherman and Spiller: "A Case of Poliencephalomyelitis in an Adult. Presenting the clinical picture of Landry's Paralysis and fatal in 38 hours after first definite motor symptoms." Phil. Med. Jour., v, 734, 1900.

Man of 21, rapid ascending motor paralysis; death from paralysis of respiration; widespread changes of inflammatory character throughout the central nervous system. One of the most important published cases.

Strümpell, Barthelmes: "Ueber Poliomyelitis acuta der Erwachsenen und über das Verhältniss der Poliomyelitis zur Polyneuritis." Deutsch. Ztschft. f. Nervenheilk., xviii, 304, 1900.

An important paper; for details see text.

EPILEPSY IN ITS RELATION TO CRIME.*

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The older definitions of epilepsy state it to be a "disease characterized by tonic and clonic convulsions and followed by loss of consciousness;" but later conceptions of it show that convulsive movements need not be present, and that consciousness need not be entirely lost.

Without attempting to formulate a definition at once applicable in all cases of so protean a malady, we can construct a better one than the above, and say that epilepsy is a nervous disorder, characterized by some impairment or loss of consciousness, co-incident with some impairment or loss of the power of motor coördination, with or without convulsions, the paroxysms being generally abrupt in appearance and short and variable in duration.

This description recognizes variations and degrees in its two most constant and prominent manifestations; one, the impairment or loss of consciousness, which is either present to some extent or is complete in every epileptic convulsion, and which is by far the more important of the two; the other, the impairment or loss of motor coördination, which may not be present enough to be appreciated, and which need concern us but little at this time.

When we see a convulsion of the grand mal type; hear the agonizing epileptic cry; see the victim fall prostrate to the earth; witness the powerful agitation of the muscular system of the entire body; see the bloody froth about the mouth, the lacerated tongue, the deeply congested face, the upturned eyes,

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and later the labored breathing and prolonged coma that nearly always follow; we have seen but one-half the picture, and seeing only that, we are apt to regard epilepsy as a disease that affects the physical to the exclusion of the psychical side—and as a thing of the mind entirely apart—while, as a matter of fact, insanity in all forms scarcely offers a broader field for studying abnormal states of mind than does epilepsy in its sundry and diversified types.

The forms of alienation due to epilepsy, however, are often subtle and inconstant in the extreme, and exceedingly difficult of study and classification.

The effects of epilepsy on the mind are temporary, prolonged, or permanent; temporary including transitory states of psychic disturbance that come with the convulsion, that are inseparable from it because they are essentially a part of it, and that disappear with it; prolonged, including forms of psychic disturbance that precede or follow the convulsion, or that coexist with it; while permanent forms combine all these and include all kinds of fixed insanity occurring in the epileptic independent of his convulsive periods.

The continuously insane epileptic is not usually liable to commit crime, his lunacy being well enough marked to secure his restraint in an institution for the insane. He has passed out of the less constant state of scientific insanity into that necessary for the disease in the eyes of the law.

Such epileptics mostly have some form or degree of dementia; the factors determining the latter being the duration of the epilepsy; its type, frequency and severity, and the original stamina of the individual.

Severe grand mal attacks, that occur daily, or oftener, that always involve the "organs of the mind," and that begin early in life in a subject already weakened by inherited tendencies, may produce complete epileptic dementia in two or three years; while in other cases in which the attacks occur just as frequently and are just as severe, but in which they do not primarily affect the "organs of the mind," and occur in persons of a better stamina, marked mental enfeeblement may be postponed for years, some cases even going through a long life and having a fair degree of intelligence in the end.

It is difficult to estimate the number of epileptics who become permanently insane in a legal sense, that is, who are continuously unable to distinguish between right and wrong, but I should place it at not less than 15 per cent. to 20 per cent.; and it is worthy of note that the epileptic who becomes permanently insane does not lose his epileptic identity; he continues to have convulsions, and it is the rule for his insanity to become more marked just before his seizures, his irascibility and tendency to violence increasing sharply at such times, invariably to decline with the passing of these periods.

The condition of dementia is characterized by inaction, mental and physical, nearly all faculties appearing to be suspended or destroyed; and, while it is true that permanently insane epileptics are generally harmless, because they are apt to be under proper restraint, it sometimes happens that they are kept at home too long, those about them being misled by a false sense of security, until the cycle of morbid inaction has run its course and there breaks forth, like a thunder clap from a clear sky, an outburst of great violence, full of danger to the patient and to all about him.

While in this condition they are prone to commit unpremeditated overt acts or crimes; and, if such a thing were possible, we ought to hold them to be twice removed from any degree of responsibility, for they made absolutely no use of any of the faculties of the mind in planning the deed and were powerless to stay the act of a hand robbed of its controlling force in the brain.

In this state the epileptic stands forth a curious anomaly under the law of irresponsibility, with consciousness subverted or destroyed, and motor coördination a disorganized force free from any law of control.

The epileptic subject to prolonged periods of mental disturbance, and not continuously insane, would be a less difficult medico-legal problem were his epilepsy only constant in type. But this is not the case, for radical changes in this respect are exceedingly common, and always possible in every case.

The same individual may have a classical grand mal seizure to-day, and a petit mal or psychic attack to-morrow. The con-

dition of irresponsibility that always attends a grand mal seizure is self-evident and distinct. So long as the fit lasts there can be no conscious action on the part of the mind. The main thing to determine is when the fit ceases, and in many cases it does not do so with the passing of the convulsion and subsequent coma, for there frequently follows a subconscious state lasting from a few minutes up to several days, or even weeks, during which the patient is wholly automatic. He becomes a mere machine. He is fully able to go about as usual, to properly care for his person, take his meals, make his bed, dust and sweep his room, and do sundry other commonplace things it was his habit to do before the attack; and yet be all the while absolutely ignorant of what he is about. His mind is a blank, while his bodily actions go uninterruptedly on; and should that man commit a crime while in such a state, he ought no more be held responsible for it than a railway engine would be for killing a person while it was running away without a driver in its cab. A person in such a state could have no criminal intent.

This same curious and interesting phenomenon of automatism may appear independent of attacks that disturb motor coördination, when it is called "psychical epilepsy," or the "psychical epileptic equivalent," meaning by the former a seizure that affects only the mind, causing a blank of variable duration in its operation, and by the latter, a frenzied state of great mental excitement that may last for several days, or subside in an hour or so, and which is not accompanied by convulsions of any sort.

Clinically the psychical epileptic equivalent is much like acute periodic insanity, the only difference being that it occurs in persons subject to epilepsy and is credited with taking the place of a regular epileptic seizure.

It is customary to plead "temporary insanity" in criminal cases in persons who do not have epilepsy, and in which the period of homicidal madness lasted only long enough to cover the commission of the act.

The duration of mental disturbance in psychical epileptic equivalent states is longer, lasting from a few minutes up to several days or weeks. They are never momentary, passing

with the plunge of the knife or the report of the pistol; at least such is my conviction at this time, for in a study of over 1,300 cases I have not seen one of this type that lasted so brief a space of time.

Established proof of the presence of the psychical epileptic equivalent ought to settle the absence of responsibility beyond reasonable doubt.

The greatest medico-legal problem connected with epilepsy is encountered in its purely psychical forms—those uncomplicated by any motor disturbance; that make no rude sign of their approach; that sometimes last for hours, or days, or even weeks, and finally pass away as silent as they came.

A. B. I., a man of 39, a patient at the Colony since 1897, illustrates this type of the disease very clearly. On being asked "Do you sometimes have thoughts come into your mind very suddenly that tell you to do something you know to be wrong?" he answered, "No, sir; I'll tell you what I think answers the same purpose to which you refer. The nearest that I can come to it and the most marked one that I ever noticed was just like this. I was at work in the morning on one end of a row of corn and I got three rows or more set up. I looked at my watch and it was half past seven. All of a sudden I felt a queer sensation, then I said, 'There, you have got to look out or you won't know what you are doing in a minute.' That is the last I knew until I came to myself and I was clear across the corn patch (fully $\frac{1}{4}$ of a mile away), and had three rows of stalks set up. During all that time I wasn't conscious at all, and I wouldn't have known anything about it only I was over there alone, and the work was done." This particular seizure was witnessed by an attendant, who reported it at the time.

M. S., a woman of forty, sat in my office addressing envelopes from a printed list, and addressed six exactly alike, showing much embarrassment when she came to realize what she had done. I happened to glance at her at the time and there was nothing to indicate the presence of a seizure save a slight pallor of the face and a staring expression of the eyes.

P. DeM., another patient, whose duty for several months it has been to sweep and clean certain rooms at 7:30 A.M. ev-

ery day, will have a seizure in the afternoon, or evening, pull out his watch and say, "Well, its half past seven and I must get to work," suiting his action to the words by getting his broom from the closet and going about his customary task in the usual manner, only to "wake up" a little later and appear chagrined at what he has done.

It is never safe to oppose an epileptic while he is automatic, as he is apt to become combative and dangerous.

L. L., a former patient at the Colony, had a petit mal seizure in an elevated railroad train in New York. By the time the guard reached him he seemed to be all right, but when the time came for him to leave the car some minutes later, he made no move to go. The guard took him by the arm to pull him towards the door, when the patient struck at him violently and a rough and tumble fight followed. An officer was called and locked the patient up. When he finally came to his senses he was greatly mortified at being in jail, and on showing his card of epileptic seizures, was permitted to go. He was unconscious when he struck the guard; had no intent whatever to do wrong, and was entirely blameless.

W. D. M. entered the Colony at the age of thirty-eight, having been an epileptic two years only. He was a man of remarkable talent; a graduate of Hamilton College and an honor man in his class; but who for ten years prior to the beginning of his epilepsy dissipated greatly in every way. He suffered from marked post-convulsive automatism, the condition often lasting several days.

If let alone, he would pass through this period all right, all the while performing with much accuracy his daily work of making beds, sweeping floors, cleaning lavatories and polishing brasses.

Once while in an automatic state, he was accidentally struck by another patient who was having a seizure, and he proceeded to beat the man most severely. On regaining consciousness some hours later, he had no knowledge whatever of the assault and was greatly disturbed over what he had done.

One of the most interesting cases of reputed epileptic automatism that has come under my notice is that of R. F. H., a

man of forty, an epileptic eighteen years, and who entered the Colony early in December, 1901.

His family history is not good, and the patient himself drank and smoked to excess until a year after his epilepsy developed, which was at the age of twenty-one. He is a man of intelligence and was profitably employed as a commercial traveler.

It has been his habit for years to keep a diary, noting therein his epileptic seizures with a certain Greek sign, to conceal the identity of his trouble as far as possible.

He left Rochester September 26, 1901, for a prolonged Western trip, and his diary faithfully records the activities of each day up to December 14th following, when he entered the Colony. The notes in the diary are in detail, giving the names of the places visited; the railroads he traveled over to reach them; the hours of arrival and departure; the names of the firms he called on; the result of these calls; together with frequent notes to show how he felt, how many letters he wrote, and many other things of a personal nature. We will omit these diary notes between September 26 and November 15, and give them from that time on as copied from his diary by the patient himself:

Nov. 15. Little business today. Went to Kalamazoo in afternoon. Wrote two letters. Serious epileptic collapse on the street this morning; at Elkhart.

Nov. 16. Saw Kalamazoo trade. Slight touch epilepsy in evening. Wrote three letters.

Nov. 17. Sunday. Spent the day indoors, writing and figuring. Wrote three letters. Epileptic attack, after a smoke this afternoon.

Nov. 18. Visited trade in Battle Creek, Marshall and Albion. Wrote three letters.

Nov. 19. Did the Jackson and Hillsdale trade today. Not much business. Had attacks of epilepsy both forenoon and afternoon.

Nov. 20. Visited Angola and Auburn. Slept at Columbia City. Wrote one letter. Had epileptic attacks both forenoon and afternoon today.

Nov. 21. Columbia City and Fort Wayne both attended today. Toledo by night. One slight epileptic attack today. Wrote four letters.

Nov. 22. Spent the day in Toledo. Up to Detroit on evening train. Received my long-looked-for "medicine quantity" letter at last. Wrote four letters.

Nov. 23. All day in Detroit. Did little business. Troubled with chills and fever. Took strong dose of quinine at bedtime, also some whiskey.

Nov. 24. Spent all day on correspondence and literature, in hotel. Wrote four letters.

Nov. 25. My diary says: total epileptic collapse.

Nov. 26. My diary says I was at Pontiac, also Detroit, but further than this I know nothing, and have no recollection whatever regarding the day.

Nov. 27. My diary says I got up at 8.30 by my watch, i.e., railroad time. Utterly worn out. No memory left. Saw a doctor. Am to be sent home tonight on M. C. R. R. No. 3 lower berth on sleeper. Night messages sent to my home doctor, my firm and my landlord. (I remember none of this.)

Nov. 28. My diary says: Breakfast on train. It also records \$30.00 turned over to my employer. (I have no personal recollection of these items.)

Nov. 29, 30 and Dec. 1. At hospital. (No record or recollection of this.)

Dec. 2. My diary says: Up and dressed after dinner. My employer called. I am weak but mentally clear today. No recollection hardly.

Dec. 3. My diary says: Up at 9 a.m. No further record.

Dec. 4. My diary says: Up at 9 a.m. Dressed fully. (From this I infer that I only used my dressing gown on the other two days.) My employer called with the Craig Colony papers, which the doctor signed later.

Dec. 5. Up for breakfast. Back to bed. Up again 10 a.m. Wrote a letter. Had an epileptic attack at 7 P.M. Chewed a thermometer when being put in my mouth to take temperature. (I have a sort of hazy recollection of this—spitting out cut glass, etc., but nothing definite.)

Dec. 6. Up and dressed for breakfast. Paid \$1.25 for thermometer. Today's visitors were W. H., Mrs. H., and Dr. J. Wrote one letter.

Dec. 7. Up and dressed 7.30 a.m. Got shaved. Went outside and over home. Saw Mrs. H. Back to hospital for dinner. Van—called 8 p.m.

Dec. 8. Sunday. Three ladies, one man called on me today.

Dec. 9. Depressed. Wrote two letters. No further record in diary.

Dec. 10. Diary says: Epilepsy between 4 and 5 p.m. Chewing severe. Record of four letters written. (Beyond these facts diary does not throw any light, nor does memory recall the day at all.)

Dec. 11, 12 and 13. Back home again. (No recollection of these three days. Diary records two letters received and one written, but memory fails to recall them. And these were vitally important days, too, when I was making arrangements for my sojourn at Craig Colony, and trying, presumably, to straighten out my affairs a little before leaving. I discovered, on my return home for a week in February, that I had given away a number of personal effects to friends, and failure to recall this fact caused a few rather embarrassing blunders. For instance: I calmly arranged to have some furniture taken up to the Colony, which I had previously sold to my landlord.)

Dec. 14. My employer accompanies me to Sonyea. Diary makes note of the main facts, but my memory fails to respond when I try to recall them now.

Dec. 23. From the 14th till now—a week—my diary makes note of letters received and answered. Also states that on Tuesday, December 17, I was epileptic all day, and on the 18th there is also the sign of epilepsy, but as far as personal recollection goes, my memory is *nil*. I have a sort of "hazy," "dream-like" recollection of matters during that period, when I try to recall it by going to my correspondence and such like, but am unable to fix things at all definitely. (I have carbon-manifold copies of the letters, which show them to be perfectly normal and sensible, yet my memory fails to retain the incidents referred to in said letters.)

From December 23 till today—over two months—I have been in better health than for years past, and have had but three epileptic attacks. (None of them was serious, and each clearly traceable to exciting or depressing primary causes.)

The main feature noticeable in this somewhat disjointed description of my goings-on from September 26 till today, and which I desire to emphasize, is the practical loss of memory from November 25 till December 23. While my diary keeps a fair record of most of the time, and my mind recalls certain days and incidents dimly, I really seem to know nothing as to my existence during that period, and might as well have been in a comatose condition. Though my letters and comments seem perfectly lucid and rational, I have no recollection of most of the incidents there narrated.

It appears from the foregoing that he suffered a "serious epileptic collapse" on November 15th, and had other isolated attacks daily up to the 20th, when they ceased, only to reappear again in the form of "total epileptic collapse" on the 25th, from which time until December 23d, a period of twenty-eight days, he had a "practical loss of memory."

It does not appear that unconsciousness during these twenty-eight days was absolute and complete; for the patient himself says, with every evidence of honesty and sincerity and without any motive for evasion, that while his mind could recall "certain days and incidents dimly," he really seemed to "know nothing" of his existence during that period.

One of the most remarkable features of the case was the patient's seeming ability to write down certain incidents and impressions acquired while he was in a subconscious state, and yet have no knowledge of the fact later, only knowing that he had done so by seeing his own writing on the pages, or copies of letters he had kept.

Kran (*Psychiatric Wochenschrift*, July 7, 1900), reports the case of a male epileptic, twenty-two years of age, given to wandering impulses, during which he would attempt suicide or try to frighten people by flourishing a revolver in their faces, adding that "all his actions at such times were entirely unconscious, in a legal sense, and the patient had no recollection of their occurrence. The periods of amnesia varied considerably; the shortest duration was four days and the longest twenty-three days. The patient was not mentally sound between the attacks; he was always melancholic. During the wandering impulse he was not responsible for his actions, and therefore escaped punishment."

P. DeM., mentioned above, while in this state will answer a question as to the time of day when he is looking at his watch and do it correctly, but he will have no recollection whatever of it afterwards.

Another patient, J. L., will imitate certain gestures made before him while he is automatic, and yet know nothing of it afterwards. If told to make the gestures without being shown how, he pays no attention to the command.

In the *Journal of Mental Science* for January, 1900, White, of the City of London Asylum, in writing on epilepsy associated with insanity says, "The automatic actions of these patients after fits are remarkable. Whatever their erratic behavior may be, they remember nothing of it when they come to themselves. I am one of those who are of opinion that chronic epileptics should be deemed irresponsible for homicidal acts, having seen many cases of epilepsy marked by brutal violence associated with an absolute mental blank as to all that had occurred."

P. P., a young man of twenty-four, a native of Greece, was indicted and recently tried for murder in the first degree in this city for shooting to death his partner in business. Competent testimony was adduced to show that the defendant and the man he killed had been the best of friends for years; that there was absolutely no motive for the crime; and that the defendant not only came from an epileptic family, but was himself a victim of the disease.

On its face, the murder bore every evidence of a cold-blooded crime. In the presence of witnesses the two men quarreled while trying to adjust an account. Angry words passed between them and ugly insinuations, derogatory to the fiancée of the defendant, were made, when he suddenly drew a revolver and fired five shots, point blank, at his partner as fast as a self-acting revolver would work, three of them taking effect and causing death.

Witnesses testified that the defendant then threw his revolver on the floor and made no effort to escape; and it was also testified that he was heard shortly afterwards to say, "It's too bad; it's too bad!" The shooting occurred about quarter past twelve in the afternoon and the defendant was at once lodged

in jail. Other witnesses testified that after the defendant was in jail and when asked what he was doing there, replied, "I shot George."

In his own testimony on the stand the defendant declared that his mind was a blank from the time of the quarrel in the store until he came to his senses in the jail about two and a quarter hours later, and that he knew absolutely nothing of what transpired in that time.

The murder was committed in April, 1901, and the trial held in February, 1902. In the meantime, two certificates—one from a physician, the other from a priest—were secured from Greece, to the effect that the defendant's father was an epileptic; that he often had "nervous sickness" and would fall down almost daily, and that he had been so afflicted for many years.

I was asked to examine the man and give testimony in the case, and repeated examinations made while he was in jail revealed, among other things, the following:

He was born in Greece and came to America nine or ten years ago. Speaks English quite perfectly; seems to understand readily; answers questions in a simple and straightforward way. Age 24; height 5 feet, 2½ inches; weight 134 pounds. Present occupation, flower merchant. Mother died in childbirth; father living and subject to epilepsy; grand-parents lived to old age, father's mother dying of epilepsy. Has one sister who is living and well. No history of insanity, intemperance, or excesses of any kind in any of his ancestors obtainable, save it is stated that his father becomes mentally disturbed at times as the result of his epilepsy.

Temperature 98.5; pulse 88; respiration 20. Physiognomy: complexion clear and smooth; nutrition good; expression calm and benign; speech clear and distinct, except English not perfect. No anatomical stigmata about the face, cranium, teeth, palate, ears, or limbs. Some anomaly of skin in the way of dense hairy growth over the shoulders, chest and arms. No physiological stigmata in the way of tremors, tics, or nystagmus; nor is there any evidence of mental stigmata of any kind. He does not appear to be erratic in any way, emotional or egotistical. All superficial reflexes, including the plantar, cremas-

teric, abdominal, epigastric and scapular, respond naturally. Of the deep reflexes, that of the left patella is somewhat exaggerated, those of the wrist and elbow being normal. The left pupil responds more slowly to light than the right. There is no ankle-clonus and no impairment of tactile sensation in any part of the body. Vision and taste normal; hearing defective, especially on right side. Measurements of limbs show nothing anomalous. Power of grip coequal, but low in both hands.

I was constantly impressed with the man's evident honesty and sincerity, and his expressions of regret for the crime appeared to be genuine.

He stated that the first epileptic seizure he had that he remembered occurred when he was eight, at which time his father told him of a former attack that occurred when he was six. On one occasion he fell from a single story window while in a fit, cutting his head in four places, three small star-shaped scars now appearing on the forehead a little to the left of the center, and a fourth one in the edge of the hair above the left temple. He described an attack that occurred in Middletown, Conn., in '95, when he fell downstairs, and others that he had in jail after the murder, the first occurring three weeks after the event. The jailer testified that he saw him three different times in attacks of some sort, and, from what I could learn of them from the jailer, it was my belief that the attacks were epileptic.

The defendant testified on the stand that the last thing he remembered in the store—where the shooting was done—was a feeling as though "a wave of cold air was creeping from his feet upward," then his eyes "got dull and flew about;" he saw "yellow, red and green," after which he remembered nothing. He also declared he had the same sensation on the occasion of the attack in Middletown in '95.

The question arose as to the mental state the patient was in when he fired the shots; and I stated it as my belief that if the patient experienced the initial symptoms of an epileptic convulsion, such as he described as being present at the time, he was in an automatic or subconscious state when he committed the deed and could not, therefore, be held responsible.

The word "aura" signifies "breath," and it is defined as a "sensation like a gentle current of air rising from the limbs or body to the head, a frequent forerunner of an epileptic attack;" while the visual aura, in the form of a play of colors before the eyes, is as common as all the other special sense auras combined. The defendant described the presence of these auras in a manner to credit belief in the truth and sincerity of his statements.

The question also arose as to whether a person in a complete state of epileptic automatism could receive a mental impression that he could retain and carry into the conscious state beyond, and I gave it as my opinion that such a thing would not be possible.

Then came the question, "How could the defendant realize he had done something wrong and seem to regret it (as it was claimed this man did, when he said shortly after the shooting, 'It's too bad; it's too bad'), if he was in an automatic state at the time?" and our contention was that even though the defendant might have dimly realized at the time that he had done wrong, it was no evidence of the possession of his mental faculties, for while in such a state a person may be spoken to and will correctly respond, yet retain no knowledge of it when the subconscious state is gone.

It is, perhaps, no more impossible to speak automatically while in such a state than it is to act so.

After prolonged deliberation, the jury returned a verdict of manslaughter in the second degree, the maximum penalty for which is fifteen years' imprisonment, five and one-half being liable to deduction for good behavior.

If this man was an epileptic and was under the influence of a seizure at the time he committed the deed, it does not seem that he should have been convicted. But in such cases we encounter a somewhat anomalous situation, for while the law recognizes the absence of responsibility in insanity, it fails to do so in epilepsy; and if this man had been found insane, he could have been committed to a proper institution, but being an epileptic, he must either be found guilty and made to suffer for his act, or be acquitted and allowed to go free.

If he was not responsible, it is clear that he ought not to have been convicted; if an epileptic and dangerous, it is equally as clear that he ought not to be at large for he may again do a deed of violence at any time.

Had his defense been insanity, the verdict, in all probability, would have been "guilty, but insane;" and had my connection with the case occurred before the line of defense was established, I would have advised such a course, for it is my firm conviction that epilepsy and insanity are often interchangeable terms and that they may sometimes be so when it is beyond human power to affirm or deny the fact; which, being true, it would seem that, given the knowledge of the existence of epilepsy, the epileptic under trial for crime ought always to have the benefit of a reasonable doubt.

In the *Journal of Mental Science* for July, 1901, Percy Smith, Physician for Mental Disorders at the Charing Cross Hospital, reports the case of a man who murdered his wife and child during the night and who was found at noon the next day sitting on a chair in the middle of the room in which the bodies lay, with his night clothing still on, his eyes closed, his head bent forward, and his hands loosely in front of him. An empty vial which had contained chloroform and oil of cloves was found on the washstand, and there was a smell of the latter drug. There were bloodmarks on the prisoner's clothing and on his arm.

He seemed unconscious, made no reply when spoken to, shouted at or shaken, nor any resistance when he was laid on the floor that he might be dressed to be taken to the police station.

On arrival at the police station at 3:15 P.M., further attempts were made to arouse him, and with the idea that possibly he had taken some poison, a stomach pump was passed, but the fluid that was drawn off merely contained clear gastric juice and did not smell of either chloroform or oil of cloves. At the same time he is reported to have said: "I have been roughly treated; which of my children is dead?" Two hours later he was examined again and appeared to be thoroughly conscious of the position he was in and to be sane, but said he was entire-

ly unconscious of anything that had happened between the time he last applied the chloroform and oil of cloves after going to bed, in order to relieve severe neuralgia, and the time when he became conscious at the police station after the stomach pump had been passed.

He burst into tears and used many expressions of endearment in regard to his wife and child, adding, "We never quarreled in our lives. How could I have done it? I suffer very much from my head, especially at night."

He was fifty years of age, and had entered the army in '70, serving for many years in Egyptian campaigns and was known during that time to suffer from "petit mal de soleil" and "fainting spells." As a soldier his conduct was exemplary and he rose to the highest rank obtainable by a non-commissioned officer.

It was also reported that he had a sunstroke shortly after entering the army, that rendered him unconscious from noon one day until the following morning, and that he became subject to "fits" soon after that.

The physicians called to examine him endeavored to establish his irresponsibility on account of epilepsy.

In his charge to the jury the judge did not refer to the rules in the *McNaughton* case, nor mention the question of "right and wrong," "a knowledge of the nature and quality of the acts committed," but stated that the question the jury had to consider, practically the only question, was whether the deed was committed under circumstances which would absolve the prisoner from the full consequences of the crime; adding that when the jury was considering the history of the prisoner they could not shut their eyes to the history of the other members of the family.

The jury returned a verdict of "guilty, but insane," and the prisoner was ordered to be detained during the pleasure of the Government.

Aside from the epileptic's inability to distinguish between right and wrong when under the influence of a seizure, we ought to remember that inhibition in most cases is also impaired or destroyed; a fact that seems to escape consideration in establishing responsibility in epilepsy in this country.

It was recognized in 1887, or '88, by Judge J. M. Somerville, of the Supreme Court of Alabama, in a case in which he gave a decision that repudiated in effect the test for insanity stated in the celebrated *McNaughton* case in England (which was the ability to distinguish between the right and wrong of the act in question), and held that the true test of responsibility in cases of insanity is the power to refrain from doing the act; in other words, whether the alleged evil doer acted under duress of disease which may have impaired or destroyed his powers of inhibition.

The application of a similar test in establishing responsibility in epilepsy would seem especially fitting and just.

Periscope.

Centralblatt f. Nervenheilkunde.

(1902. February 15, No. 2.)

1. On the History of Katatonia. ERICH ARNDT.

1. *History of Katatonia.*—Arndt provides us with an excellent history of the psychiatry of the first half of the nineteenth century and of that part of later psychiatry in which have arisen katatonia, and its congeners, hebephrenia, primary paranoia, melancholia attonita, and, more remotely, acute confusion. In Pinel's division of the course of mania into four stages, and in Esquirol's separation of "mania without delirium" from general mania to form part of his "monomania," is seen the impulse which led Kahlbaum to his discovery; for those earlier French observers began to comprehend the distinction between a mere mental-state (excitement or depression) and a true disease-unity. Zeller applied Pinel's course-schema too generally, dividing all forms of insanity into four stages; but his pupil, Griesinger, pointed out a broad distinction between those forms which are curable and those which lead to permanent mental weakness, thus bringing in the question of prognosis which Kahlbaum and, later, Kraepelin still more, made the *raison d'être* of katatonia. The question whether catalepsy and other motor signs are merely complications of, or curious phenomena in, melancholia, or are inextricably bound up with it in a disease-entity, has its analogue in the long discussion of the various paralytic manifestations which before the days of Boyle were regarded as mere "complications" of insanity instead of symptoms of the disease-entity paresis. For just as the tremulous speech and progressive weakness of paresis were minutely described before Boyle's discovery, so various phases of katatonia had been described by several observers before Kahlbaum's classification appeared in 1863. Guislain, in his "Extase," first considered the somatic element, the general motor fixation, which later became so prominent in the concept of katatonia, and the nature of which has been such a bone of contention in relation to the disease. Esquirol, Dagonet and others described "verbigeration;" and Arndt, in a paper on "Chorea and Psychoses" (1868) had dwelt upon catalepsy and echolalia and upon the choreiform movements which, as we now know, characterize katatonia.

This was a period of analysis and gave rise to a number of minor and overlapping subtypes. The reaction began with Fink, in 1876, when he pointed out that many hebephenics betray motor symptoms like those of katatonia, cases which he called "katatonic-hebephenics." Next Schüle maintained that the *paranoia originaria* of San, is virtually a subtype of hebephrenia, and Kahlbaum (1884) showed the affiliations of hebephrenia with the hereditary insanity or insanity of the degenerates of the French. Then Pick proposed to embrace all "the hereditaries stranded on the rock of puberty" (Schüle's picturesque phrase) under the generic term *dementia praecox*, the Latinized form of Morel's *démence précoce*.

Dasazkiewicz extended the age-limit of the group to thirty years in order to include the katatonics, and lastly Kraepelin added dementia paranoides, the conception of which may be regarded as a development from the primary paranoia of Westphal, who had from the first (1876)

emphasized the relationships of the latter form to katatonia. It is the merit of Kraepelin to have cemented the group of dementia præcox, not on a basis of delusions nor of motor symptoms, nor of clinical course, but on a basis of prognosis,—the outcome in mental weakness.

Arndt discusses various subsidiary theories. Cramer's as to muscle-hallucinations, Freusberg's concerning the cerebral mechanism of katatonia, etc. Altogether in this "History of Katatonia," Arndt has performed a great and needed service to all who are interested in modern psychiatry.

PICKETT (Philadelphia).

Centralblatt für Nervenheilkunde und Psychiatrie.

(1902. May.)

1. The Disposition of Insane Criminals. GUSTAVE ASCHAFFENBURG.
2. Podagra and Neuroses. P. J. KOWALEWSKY.

1. *The Criminal Insane*.—No part of the care of the insane, says Aschaffenburg, presents so many difficulties as that which relates to the disposition of insane criminals. In the asylum now being built in Baden, a pavilion has been set apart for 20 to 25 men of this class. The first observation-section of the kind was established in Prussia; and other asylums followed in rapid succession at Breslau, Köln, Münster, Halle and Graudenz. None of these accommodated more than from 40 to 50 patients. Special asylums for the criminal insane have existed in other countries for a long time, Italy having three of them. It is an embarrassing question whether in such an institution cases shall be placed in which insanity has come on after a long criminal career, or only such as have come in conflict with the laws in the course of an acute attack of insanity. For the latter class the brand of "criminal insanity" seems unnecessarily odious, especially when placed upon the hitherto harmless parietic.

Among 27 insane patients who had committed grave crimes, only 4 had been criminals before the onset of their insanity; and anyhow, the problems connected with the management of the criminal in an asylum rest upon the nature of the insanity, and not so much upon the individual's criminal record. Aschaffenburg thinks that it is best to keep the criminal insane in the general asylums, where, in connection with the universities, a study of criminal psychology promises most to medicine and to law.

2. *Podagra and Neuroses*.—After giving the views of various authors on the subject of the relationship of the uric-acid diathesis to migraine and to epilepsy, Kowalewsky cites several cases, in one of which migraine and epilepsy seemed to replace one another as equivalents. In each of these two neuroses the uric-acid diathesis serves as an exciting cause, though in neither can podagra alone account for the attacks; there is always a basis of hereditary predisposition in the victim of epilepsy or migraine. In senile epilepsy sclerosis of vessels and of nerve-tissue is the cause of the attacks, it is true, but podagra underlies these organic changes.

PICKETT (Philadelphia).

Rivista Sperimentale di Freniatria.

(1902. Vol. 28, Fascicle 1.)

This entire volume is given up to the proceedings of the Eleventh Congress of the Italian Society of Alienists, which took place during September, 1901. Abstracts of the proceedings are given. Many of the original articles have appeared elsewhere, and of these a number have been abstracted in the JOURNAL OF NERVOUS AND MENTAL DISEASE.

Rivista di Patologia Nervosa e Mentale.

(1902. Vol. vii, fasc. 4, April.)

1. Study of the Function of the Cerebellum. G. PAGANO.
2. Yellow Fever as Etiological Factor in a Case of Progressive Paralysis. E. BELMONDO.
3. Chronic Cocainism; Psychic Disturbances in a Family Addicted to Cocainism. A. SOUTZO (Junior).

1. *Function of the Cerebellum.*—A description of experiments, covering a year's time, in excitation of the cerebellum of dogs by injection of curare into its substance. The author does not yet feel justified in drawing any positive conclusions as to the functional topography of the cerebellum, yet gives numerous findings to date, showing a universal participation of the cerebellum in psychic, motor, and visceral functions. Within the limits of an abstract, detailed description of manifestations elicited by excitation of different areas of the cerebellum is not feasible, but as illustrative of the phenomena from which the author formulates his theory as to the cerebellar function, may be mentioned muscular contractions, varying in degree from contraction of single groups of muscles to epileptic convulsions, induced by injection of curare into the lateral lobe of the cerebellum. These movements are believed to be accomplished through the medium of the cerebral cortex, as excitation of the above-named cerebellar area failed to elicit motor phenomena after extirpation of the motor zone of the cerebrum. The author holds it unreasonable to suppose that the cerebellum is the seat of the manifold functions which are stimulated through its excitation, the more so, that extirpation of that organ does destroy any of the functions; but, what is of fundamental importance, is the finding of physiologists and clinicians that animals deprived of the cerebellum exhibit premature exhaustion. The deduction drawn is that the cerebellum is the sthenic organ of the nervous system, and in it is specialized to the highest degree that vital property of nerve-cells in general; i.e., the storing up of energy to the various nerve-centers when functioning is brought about through reflex action.

2. *Yellow Fever in Etiology of Progressive Paralysis.*—The description of this case constitutes a fresh contribution to the toxico-infectious, or auto-toxic theory of progressive paralysis. The author maintains that whatever may be the pathogenesis of dementia paralytica, hepatic insufficiency is an important predisposing cause as in other psychopathies, for example, delirium tremens. The causal relation between dementia paralytica and yellow fever in this case seems probable from the following facts: (1) Immediate connection of time between attacks of yellow fever and beginning of paralytic symptoms, there having been no previous indications of paralysis; (2) absence of other cause, particularly almost certain absence of syphilitic taint; (3) severity of the attack of yellow fever; (4) occurrence of various paralyses and muscular atrophies of neurotic origin; (5) fatty degeneration of the liver caused by icteroid infection favoring endogenous and exogenous intoxication, and hepatogenous changes in the mental and nervous functions.

3. *Chronic Cocainism.*—Histories of a family of four, in whom the cocaine habit had been acquired from one member.

R. L. FIELDING (New York).

Archiv. für Psychiatrie und Nervenkrankheiten.

(1902. Vol. 35, Part ii.)

1. Old and Recent Brain Researches. EDWARD HITZIG.

2. A Contribution to the Psycho-pathology of Neurasthenia. A. PICK.
3. A Case of Softening in the Dorsal Portion of the Pons Varolii. ALBERT RANSOHOFF.
4. Secondary Degeneration and the Patellar Reflexes in a High Transverse Lesion of the Cord. EDWARD WINTER.
5. A Contribution to the Induced Psychoses. O. KÖLPIN.
6. A Case of Myasthenia Gravis Pseudo-paralytica. SIEGMUND AUERBACH.
7. (I) A Glioma of the Fourth Ventricle. (II) Degeneration of the Posterior and Anterior Roots in Wasting Diseases, and Conditions of Increased Intracranial Pressure. PH. F. BECKER.
8. Post-mortem Findings in a Case of Hystero-epilepsy. PAUL STEFFENS.
9. Statistical Contribution to the Etiology and Symptomatology of Dementia Paralytica. RAECKE.

1. *Old and Recent Brain Researches*.—An exhaustive historical, critical and experimental study of the methods of examination, and the theories relating to the investigation of the brain.

2. *A Contribution to the Psycho-pathology of Neurasthenia*.—Prof. Pick directs attention to a peculiar mental state, rarely observed in neurasthenia, which had been clearly pictured by Morel, who described a case. It is characterized by an excessive sensitiveness, and morbid impressionability. A slight and wholly inadequate cause is sufficient to call forth a violent emotional storm, either of depression or exaltation. This lack of emotional equilibrium is often hereditary, and manifests itself in early life. Physiological examples of this type are represented by the so-called "*Gefühls-menschen*." Rarely it may so far overstep the normal boundary line as to come within the category of the psychoses. It is to be distinguished from melancholia and the mental state termed "*Luxury of Pity*," as well as the "*Anxiety Neurosis*" of Freud.

3. *A Case of Softening in the Dorsal Portion of the Pons Varolii*.—A woman, aged fifty-five years, five weeks after an apoplectiform insult, presented the following clinical picture: Paralysis of the associated movements of both eyes in a lateral direction. The left eye-ball was rolled inwards, due to spasm of the internal rectus. Convergence was lost. Paralysis of the left facial with implication of the upper branch. Paresis of the right arm and leg. Paresthesia of the right side of the body, with hypesthesia and hypalgesia. The paresis of the right arm and leg increased and was accompanied by weakness on the left side as well. The right abducens nerve recovered. Death two years later.

Microscopical examination—In the dorsal portion of the pons a cyst was found. The left abducens nucleus, left facial nerve, and left fasciculus longitudinalis posterior, were destroyed. Also the greater portion of the median fillet. The pyramidal tract on the left side was also slightly degenerated. A very slight defect was noted in the right posterior longitudinal fasciculus. Ascending and descending degenerations could be traced in the median fillet; also for a short distance in the posterior longitudinal fasciculus. In the summing up of the case, the temporary paralysis of the right abducens is attributed to a distant effect of the lesion [*Fernwirkung*]. The contracture of the left internal rectus to irritation of the right posterior longitudinal fasciculus. The slight disturbance of the sensation is explained by the incomplete lesion of the median fillet, or according to some the bilateral representation in the hemispheres.

Zwangslachen, which was a very constant symptom, has been frequently observed in pons lesions. Von Bechterew has emphasized this fact and attributes it to a lesion of the thalamo-spinal tract.

4. *Secondary Degeneration and the Patellar Reflexes in a High Transverse Lesion of the Cord.*—A young man sustained a fracture at the level of the third dorsal about 4 mo. There were the clinical evidences of a transverse section of the cord. At first no reflexes below the lesion were elicitable [shock]. Later, however, the knee-jerks could be obtained by reinforcement, but only with difficulty. The plantar reflexes also returned. During the five days preceding death, no patellar phenomenon could be elicited. Microscopically at the seat of greatest compression about 100 nerve fibers were demonstrable. This return and extension of the patellar reflex is explained by the Bastian-Jackson theory: that the cerebrum and cerebellum are antagonistic, the latter furnishing the muscle-tonus and the cerebrum the inhibitory influence through the pyramidal tracts.

The increase of muscle tonus produced by the Jendrassik was sufficient to allow a slight patellar response. When, however, the destruction of nerve-fibers was so far advanced as to cut off communication with the cerebellum, reflex action was irrevocably lost.

Unusual were oculo-pupillary symptoms on the left side, produced by hematomyelia in the posterior horn and adjacent column of Burdach at the level of the 1 D and viii C segments, and implicating the ciliospinal center.

The following secondary degenerations were of interest:

Below the lesion, Schultze's comma tract could be traced to the 12 D, where the last fibers were in close relation to the columns of Clarke. At the level of the 8 D, and continuous with the comma tract at its caudal portion, a less compact area of degeneration appears, which in lower segments approaches the posterior median fissure, and in the lumbar region assumes the area occupied by Flechsig's oval field; this was traced to the sacral cord along the posterior portion of the posterior median fissure.

This the author considers to be anatomically distinct from the comma tract, and in no wise its continuation. The antero-lateral ascending tract of Gowers was traced by the Marchi method through the medulla and pons, situated first in the angle formed by the facial root and the corpus trapezoides, then passing in the lateral fillet and curving backward around the brachium conjunctivum to the anterior medullary velum, and thence to the worm of the cerebellum. In some of the lower animals this course had been demonstrated by Tooth, Mott and Löwenthal.

5. *Contribution to the Induced Psychoses.*—In Schönfeldt's conception of this form of mental disease the following requirements must be fulfilled. The form of the psychosis and the nature of the delusion must be essentially the same in the primarily diseased and the secondarily injected. That the induced malady is the direct result of psychical injection by the first.

Joerger's statement that the secondarily affected not only accepts fully the delusion implanted, but also contributes to its expansion, still further narrows the clinical picture.

Care must be taken to eliminate cases of simultaneous insanity [*Folie Simultanée*], and *Folie Imposée*. The latter form may resemble very closely, and indeed is often an earlier stage of, the *Folie Communiqué*.

The author reports two cases: (1) Man and wife. Both with psychopathic predisposition. The woman excitable, domineering and dog-

matic. The man sensitive, retiring, susceptible. The type of the psychosis was the *Querulanten Wahnsinn*. The man was the victim of mental dejection, but later was the more active and violent in the toils of the delusion. (II) Two sisters, one blind. When they first came under observation both presented symptoms of paranoia. Identical monomania in both. Could not decide which was first affected. Here the psychopathic predisposition could not be demonstrated. The other important factor, community of interests and intimate social and domestic relations, was present in both cases.

6. *Case of Myasthenia Gravis Pseudo-paralytica*.—A woman twenty years of age, immediately following a severe shock, was seized with great weakness of the limbs, and a feeling of respiratory oppression. The next day appeared double vision, which was soon followed by partial ptosis, weakness of the lips, tongue, face and the muscles of mastication and deglutition. The above group of symptoms were aggravated during attacks of influenza, the menstrual periods, and by any unusual bodily or mental strain. Contrary to the usual course, she was more comfortable during the evening than the earlier part of the day. The ocular excursions, although slower than normal, were not paretic, and phonation was perfect. The fatigue-phenomenon of myasthenia was present in the muscles of tongue, face, eyelids, pharynx and jaws, the repetition of the movement five or six times usually sufficing. In the arms and legs, however, while weak, this phenomenon was wanting, while the myasthenic, electrical reactions were typically present. [A similar observation by Murri.] Slight tendency to incontinence of urine and feces. Patellar reflexes were exaggerated.

As the patient is now thirty-seven years old, this curious affection has lasted seventeen years. Oppenheim, in his monograph, cites a case of fifteen years' duration, as the longest on record.

Following Van Horn's theory, based on frog experiments, that fatigue is due to the accumulation of CO₂, and exhaustion to want of oxygen, inhalations of the latter were attempted, but had to be abandoned owing to the dyspnea.

In conclusion, attention is drawn to the faint resemblance of myasthenia gravis and the severe forms of neurasthenia, especially the spinal myasthenia of Löwenthal; also that diplopia and weakness of articulation is not so very rare in these forms.

7. (a) *A Glioma of the Fourth Ventricle.*

7. (b) *Degeneration of the Posterior and Anterior Roots in Wasting Diseases, and Conditions of Increased Intracranial Pressure.*

I. The patient was a woman aged thirty-eight years. The initial symptoms were vertigo and vomiting. A palsy of the right facial soon became apparent, which increased; partial reactions of degeneration. Then failing vision in the left eye, with atrophy. Choked disc absent during the entire course. The right abducens became paretic, then the left third. To this were added paresthesia of the mouth, difficulty in deglutition, mastication and articulation, sense of taste impaired, olfactory sense was obliterated. Hearing was diminished, especially on the right side, but occurred very late. The left facial became affected. Weakness and heaviness on the right side, but never marked. A few days before death, diminished sensation on the left side.

The irregular succession of involvement of the cranial nerves, Rt. 7, Lt. 2, Lt. 3, Rt. 6, Rt. 5, 9, 12, 11, 8, suggested a diffuse basillar process, rather than a single central growth. This tumor, a glioma, was exquisitely infiltrating in its growth, with no sharp boundaries. It occu-

pied the pons and the upper portion of the bulb, projecting into the fourth ventricle, and producing a moderate hydrocephalus.

Headache did not occur until late. The whole course of the disease lasted about eight months.

The left third nerve was not directly involved by the growth, so that its paralysis is explained by distance-effect (*Fernwirkung*), or possibly by pressure against the clivus of the sphenoid bone. The cause for general muscular weakness, more especially on the right side, was found in degenerations in the pyramidal tracts and in the cells of the anterior horns and anterior roots. The intramedullary portions, posterior of the roots, were also degenerated.

(b) The author has investigated intramedullary degenerations in various conditions. The Marchi method was used. The series of 17 cases included 3 of brain tumor, hydrocephalus 3, cerebral hemorrhage 4, arterio-sclerosis universalis (uremia) 1, Basedow's disease 2 (1 case was negative), carcinoma 1, pernicious anemia 1, phthisis 1, bone tuberculosis 1.

The degenerations were most conspicuous in the lumbar region, next in the cervical, and least in the dorsal. In the posterior roots and columns the most severe and constant degenerations were present. High grade degeneration in the cells of the anterior horns and anterior roots occur, but less frequently. Rarely these degenerations of centrifugal fibers are present, while absent in the centripetal fibers.

Two theories are advanced for the explanation of these degenerative changes: (a) The mechanical theory of C. Mayer, which is based on the supposition that the posterior roots are subjected to pressure as they penetrate the minute pial constrictions on entering the cord. Increase of the intracranial and intravertebral pressure. (b) The toxic theory of Dinkler.

Hoche favors the mechanical theory, and emphasizes the occurrence of optic neuritis in connection with posterior root intramedullary degenerations.

The Schmidt-Manz theory of optic neuritis has a similar mechanical basis.

On the other hand, similar degenerations, which are not to be distinguished histologically, occur in cachexia and other states unassociated with increased pressure; and the pressure would not explain the degeneration of centrifugal fibers, which occur not infrequently. Again, optic neuritis may be absent where intracranial pressure is undisputed. Here the writer concludes that the pressure-theory alone is insufficient to explain these changes.

8. *Post-mortem Findings in a Case of Hystero-epilepsy.*—For the previous clinical description of the case see Vol. 33, Part 3, of this Archiv.

The patient, a woman, was trephined over the left Rolandic area, in 1898, for epileptiform convulsions. The attacks ceased for a while after the operation, then returned and occurred at monthly intervals. Duration fifteen minutes, unconsciousness uncertain, no amnesia, no cry, general convulsions. There was permanent concentric contraction of visual fields to form and color, total analgesia. On January 10, 1901, sudden development of the status epilepticus [a series of 103 convulsions], was operated on the morning of the 11th. Attacks ceased until evening, status epilepticus again developed, death the following day in coma. The status epilepticus had been produced by a hemorrhage at the base of the brain [rupture of an aneurism?] at the site of the first trephine operation. An old superficial area of softening occupied the

mid-Rolandic region. The general convulsions were attributed to this focus. Jacksonian, motor, or sensory attacks, had never occurred.

9. *Statistical Contribution to the Etiology and Symptomatology of Dementia Paralytica*.—A carefully tabulated report of 110 cases of general paralysis of the insane, observed in Siemerling's clinic in Tübingen, from 1894 to 1901. Of these 92 were men, 18 women. During this time there was noted an annual increase in the number of paralytics, especially women.

Etiology.—In 57 per cent. antecedent syphilis was proven; in 23 per cent. probable; the remainder negative or unknown; alcoholism in 25 per cent.; a neuropathic predisposition in 31 per cent.; trauma in six cases; the larger number of cases occurred between the ages of 30 and 50.

Symptoms.—The pupillary light reflexes were lost in 58 per cent.; altered in 92.7 per cent., and normal in 7.3 per cent.; inequality of the pupils in 83 per cent.; irregular outline in 69 per cent.; jumping pupils in 4 cases. Paradoxical reactions were noted once. The pupils were either normally contracted or moderately dilated; in six cases widely dilated. In these latter the reaction on convergence was also lost.

In Siemerling's comprehensive statistical study at the Berlin Charité, the light reactions were normal in 32 per cent. These cases were under observation only a short time.

The knee-jerks were exaggerated in 55 per cent.; diminished or absent in 33.6 per cent.; unequal in 18.2 per cent.; normal in 10.9 per cent. The exaggeration or diminution of the Achilles-reflex corresponded in a general way to the knee-jerks. Optic atrophy was present in 15.5 per cent. Romberg's symptom in 19 cases. Tremor of hands in 41 cases. Tremor of tongue in 95 cases. Inequality of facial innervation in 59 cases. Associated movements of the face in speaking, 42 cases. Central deafness 10 cases. Tactile sense disturbed in 16 cases. Pain sense disturbed in 63 cases. Muscular atrophies occurred in 10 cases [no R. D.]. There were apoplectiform and epileptiform attacks in 34.5 per cent., occurring more frequently in cases with exaggerated than with abolished knee-jerks. In 12.77 per cent. there was simple dementia without hallucinations or delusions. Hypochondriacal or exalted ideas were present in 67.3 per cent. Violent and prolonged states of mental excitement in 25.5 per cent. The average duration was 2 years and 4 months. In 2 per cent. of the cases, with evidences of pyramidal tract involvement, the first symptom noted was an unconquerable somnolence.

J. R. HUNT, (New York).

Revue Neurologique.

(1902. Vol. 16, No. 6, March 31.)

1. Three Cases of Tabes showing Granular Bodies in the Posterior Regions of the Medulla. PIERRE MARIE and BISCHOFF-SWERDER.
2. Vitiligo and the Sign of Argyll-Robertson of Syphilitic Origin. M. A. SOUQUES.

1. *Granular Bodies in Tabes*.—For five or six years the authors have made it a rule in all autopsies of tabes to examine the medulla by means of chromo-osmic staining, either according to the freezing method or that of Marchi. Three cases are described to show the disposition of the granular bodies. The histological examination is given very fully and technically, also the methods of preparation and staining. The authors conclude with the following considerations. It is known that the granular bodies are unmistakably indicative of recent degenera-

tion in nerve sheaths; in cases of too recent lesion for the appearance of this degeneration, they are not found, not until all the degenerated nervous matter shall have been eliminated. From the point of view of the age of a lesion and its degree of evolution, the presence or absence of these granular bodies is very significant. In numerous cases of tabes where granular bodies have been wanting, it may be inferred that the destructive pathological process in the posterior cords have ceased; and clinical observation confirms this. In certain old cases of tabes, in fact, the medullary affection seems to have stopped, and new symptoms are rarely noticed. The authors are justified in considering such as having arrived at a stage of the disease from which no farther progress will be made. Moreover, tabes is far from being the utterly fatal disease formerly described; on the other hand, it seems often to have a tendency to stop spontaneously, sometimes in the first period, sometimes after a lapse of years; and it is this factor which renders difficult the appreciation of therapeutic results.

Although results of clinical observation agree with anatomic-pathological investigation, one point must have reservations: in cases of tabetics who die with no granular bodies in the medulla, there are, nevertheless, some of which appear intermittently with the spasm of pain; however, it cannot be said that this symptom is related to the destruction of the medullary nerve fibers; in the three cases reported, the tabes was progressive and the granular bodies existed. One patient died thirty-four months after the appearance of pain, death being hastened by eschars; the second died five days after pain began, committing suicide by throwing himself from a window; the third died eight years after pain began, two years after the appearance of incoördination, committing suicide by cutting the genital organs. Thus in all, death came so soon that the tabetic progress was not completed, and the facts given were, therefore, established.

It is recommended that all who may have occasion to make autopsies of tabetic patients, especially of recent affection, should be careful to preserve and examine, by chromo-osmic reaction, some sections of the medulla for granular bodies; thus, in time, control may be gained of the facts which shall be learned.

2. *Vitiligo and the Sign of Argyll-Robertson*.—A man of sixty-nine years presented the three following symptoms: (1) Paresis of the left vocal cord with bitonal voice; (2) sign of Argyll-Robertson with bilateral myosis; (3) dischromia. The last, present for about fifteen years, was characterized by hypochromic spots surrounded by hyperchromic areas; it was on the trunk and encroached upon the thighs and buttocks; the upper margin, almost perpendicular to the axis of the body, began about two inches below the breasts; the lower margin extended from the front of the gluteal groove over the antero-internal surface of the thighs. The skin of the genital organs was heavily pigmented and presented near the raphe some hypochromic spots. The skin near the scrotum was thick and edematous, so that the region appeared deformed. When the patient entered he had two long serpiginous papulo-squamous syphilides on the abdomen, extending parallel from one antero-superior iliac spine to the other. These typical syphilides disappeared rapidly and completely after a few hypodermic injections of cyanate of mercury. There were no other significant symptoms. Lumbar puncture remained ineffective, though inducing headache and vomiting.

This man could hardly be considered tabetic, but rather, theoretically, a candidate for tabes or general paralysis, as the sign of Argyll is a very frequent symptom of this. But after years of isolation, no further sign appeared. Although the sign of Argyll is associated with syph-

ilitic affections of the nervous system, hemiplegias, myelitis, etc., still it is the single morbid symptom in some cases. In the present case the sign of Argyll and dischromia were independent symptoms, but related through the common cause, syphilis, affecting the nerve centers. Similarly, in vitiligo of tabetics, instead of trophic trouble of tabes, might it not be interpreted as cutaneous trouble dependent upon syphilis? With this hypothesis tabes and vitiligo would constitute an association of coëxistent affections in the same case, with common etiology, syphilis; from the fact that lumbar puncture gave no result, it is probable that the cephalorachidian liquid had spread through the perirachidian tissues.

JELLIFFE.

Revue Neurologique.

(1902. Vol. 10, No. 7, April 15.)

I. Muscular Psychoses. A. JOFFROY.

1. *Muscular Psychoses.*—Psychical functions have been compared in normal and pathological states, and it is not difficult to show the harmony between the different functions of the brain, psychical, motor, sensitive, trophic, all uniting in a way to form one indivisible function. A consequence of this is that in passing from the normal to the pathological state the psychical, motor, sensitive and trophic troubles may all be associated; this is proven in all the affections which originate in insufficient or abnormal development of nervous centers, as chorea, tic, tabes, syringomyelia, muscular atrophy and general paralysis. Coëxistence of motor and psychical trouble is not characteristic of any one malady, but a fact only wanting confirmation, whether in neuropathology one studies the diverse affections of the neuromuscular system which explains degeneration, or whether in psychiatry one examines the various psychoses.

For instance, in Huntington's disease mental troubles more or less pronounced will invariably coëxist with motor affections. This affection is not confined to the one member of the family affected, but often extends to more members, either in motor or mental degeneration. Facts bearing on this relationship of psychical and motor trouble, may be observed in Thomsen's disease, and Parkinson's disease may also be cited, where this point has not been sufficiently noticed. In a family in which Parkinson's disease exists there may be found not only other members with the same disease, but also choreaics, hysterics, epileptics and aliens, with cases of ataxia and headache; and there is especially emphasized the coëxistence of mental trouble, hallucinations, illusions and disorder of general sensibility with Parkinson's disease. Further, the same psychomotor complex is observed when, instead of considering muscular troubles, the psychoses are studied. General paralysis is put aside, as hallucinations, illusions and delirium constitute only a complementary syndrome, as mental trouble in chorea. In melancholia, however, besides troubles of sensibility, hyperesthesia, anesthesia and dysesthesia, which are prominent, functional muscle troubles are often seen. This is still more noticeable in certain forms of mental confusion, especially in *démence précoce*, whether by automatic movement or by that curious syndrome known as katatonia.

One case is reported to show the coëxistence of motor and mental degeneration in the same patient. A man of twenty-six years was afflicted with muscular atrophy. A summary examination sufficed to show that the first segment of the limbs was more affected than the extremities. The thigh was most atrophied, the leg notably so, while the foot showed only deformation due to tendinous retractions; corresponding gradation showed in the upper limbs, where the hands were almost

normal. After a more methodical examination all the muscles of the shoulders were found to be atrophied. The deltoid was gone, the pectorals, the rhomboideus were scarcely indicated, and wide detachment of the thoracic bone was easy. The circumference in the middle of the upper arm was only 14 cm., and the lower arm was larger. Pronation movements were easy, but supination limited. The tendinous retraction complications of the lower limbs determined a special attitude: the thigh, when abducted, was turned out; the knees, moved one from the other, rested on the bed; the legs were bent at right angles with the thighs and immobilized in this position by tendinous retractions; the heels were near together; the foot extended, forced by the shortening of the tendon of Achilles. The trapezius, the muscles of the vertebral grooves, and even those of the abdomen, were affected. The patient had a very large lower lip; the eyes could hardly be closed, but the lids were raised at the least effort. There was marked orbicular weakness. A smile stretched the mouth out of all proportion, and at the same time vertical creases appeared about the commissures of the lips. There was no deviation of the vertebral column. Thus the patient showed some physical stigmata of degeneration, asymmetrical face, irregular teeth, pointed arch and adherent lobule of the ear. It could hardly be doubted that this was incipient progressive myopathy, although the fibrillary contractions so often seen with this were not present. In the electrical examination of the muscles many had normal reaction, but somewhat weakened. In some the reaction of degeneration occurred.

Up to fifteen years of age development had been normal; at that time the wheel of a heavy wagon had passed over the patient's trunk, but there was no loss of consciousness, or any alarming symptoms, and he was able to walk away. Yet this accident was responsible for the beginning of his affection, in spite of the long time elapsing until the beginning of the muscular weakness. Six months after a cane was necessary for walking, and five or six years after, crutches. He had been in bed three years at the time of reporting.

This primitive progressive myopathy is usually an inherited disease, but not so in this case. At this point the members of the family had a strange idea that the forced chastity of invalidism was aggravating his condition, and after mature deliberation they put him in a coach and took him on a round of the houses of prostitution, bringing him home very excited, delirious and probably intoxicated. This continued the following days, with hallucinations of sight and hearing. There probably was some mental trouble before this, as it could scarcely have begun so suddenly after this singular excursion. However it be, from that moment delirium was incessant, various hallucinations of riches, persecution, alternating excitement and depression. There were frequent attempts at suicide. This mental state grew worse; at the beginning one could fix the patient's attention and obtain a response, which was later impossible. He talked incessantly and incoherently, simply starting on ideas without finishing any thought. There was no trouble with the iris, and there could not be general paralysis. The cephalorachidian liquid showed no figured elements. From the psychical point of view it was then to precocious dementia that the mental troubles might be traced. This was not the first case of the coexistence of these troubles, and the article cites many others, with comments from a more modern standpoint.

He concludes that if the purely motor nerves are affected, there will be motor trouble as in the disease of Sydenham, of Huntington's chorea, or in tic. If more specially trophic nerves are affected, there will be muscular lesions, as in Thomsen's disease, or primitive progressive my-

opathy or Parkinson's disease. Finally, if other nerves are affected there may be similar psychical troubles, as in chorea, myopathy and Parkinson's disease. Parkinson's disease is a distinctly degenerative malady; there are not only atrophied muscular fibers, but hypertrophied fibers similar to those of myopathy, so that it is placed both by pathological and clinical anatomy in this class.

In conclusion, all of these diseases mentioned with the mental troubles accompanying them, are but diverse manifestations of degeneration, forming a natural group, which the author calls *musculo-psychic*, of conceptional or hereditary origin; or, another name, *myopsychic* diseases.

JELLIFFE.

Neurologisches Centralblatt.

(1902. April 16, No. 8.)

1. Short Communication regarding a New Staining Method for the Central Nervous System. H. VON SCHRÖTTER.
2. A Case of Autochthonous Brain Sinus Thrombosis. DR. GOOD.
3. Further Concerning Asthenic Paralysis with Autopsy (E. Flatau). S. GOLDFLAM.

1. *New Staining Method.*—The use of the Alizarian group of stains, i.e., blue, green, yellow, orange, is applied to nervous tissues with excellent results. A $\frac{1}{2}$ per cent. solution is used for twenty-four hours; the tissues are then differentiated in running (tap) water, treated with absolute alcohol, etc. This gives a diffuse tissue stain, bringing out all the elements of the nerve tissue.

By using a 3 per cent. solution of the Alizarian solfonal and salt of sodium, and adding a drop of a 5 per cent. oxalic acid solution, orange-yellow color is produced. If the tissue is stained in this and then heated by a 3 per cent. soda solution after washing in distilled water, a good selective stain for the nerve sheath results.

2. *Brain Sinus Thrombosis.*—Good reports a case of extensive sinus thrombosis for which no determining factor could be discovered. After a careful study of the literature he concludes that such cases are not diagnosable.

3. To be continued.

McCARTHY (Philadelphia.)

Neurologisches Centralblatt.

(1902. April 1, No. 7.)

1. Judges and Expert Evidence. H. HOCHÉ. ..
2. Cacodylic Acid Therapy. H. SMIDT.
3. Hysteria Problems. RANKE.
4. Asthenic Paralysis, with Autopsy. S. GOLDFLAM.

1. *Expert Evidence.*—A discussion as to the value of a knowledge of medical questions by the Judge, in cases where the expert testimony is indefinite or inconclusive.

2. *Cacodylic Acid Therapy.*—The literature of cacodylic acid as a therapeutic agent in nervous diseases. It has been found of benefit in the following diseases: Neurasthenia, chorea, paralysis agitans, psychoses, etc. Hypodermic use of the drug is recommended, to avoid gastric complications.

3. *Hysteria.*—A controversial paper as to the nature of hysteria and

as to what symptoms are to be considered essential for the diagnosis. It is an answer to a paper on a similar subject by Nissl.

4. To be continued.

McCARNEY (Philadelphia).

MISCELLANY.

HYOSCINE IN PARALYSIS AGITANS. Dr. Judson S. Bury (Lancet, April 19, 1902).

The author says that hyoscine is probably the most useful drug that has hitherto been tried in the treatment of paralysis agitans. As a rule it diminishes or arrests the tremor, checks the troublesome restlessness and the desire to change position, and relieves the "hot flushes" and unpleasant sensations of heat by which these patients are often troubled. It is important to remember, however, that hyoscine is a powerful drug, and one which must be administered with great care. Merck's hyoscine hydrobromate is probably the best preparation, and it is safer to give it by the mouth than to inject it. Quoting from Williamson, he says, "A prescription which is useful is one-eighth of a grain of hyoscine hydrobromate in six ounces of chloroform water. At first two teaspoonfuls of this may be given, then three, four, or five teaspoonfuls. If necessary the dose may be increased to six teaspoonfuls (1-64th of a grain), providing toxic symptoms are not produced. The hyoscine is best given in the morning, just after breakfast, and again in the evening, just before going to bed, if the patient is troubled with restlessness and sleeplessness during the night."

CERTAIN CLINICAL TYPES OF BRAIN SYPHILIS. PEARCE BAILEY (Medical Record, June 21, 1902).

The most important clinical groups of brain syphilis are the apoplectic, the meningitic, those characterized by isolated oculomotor palsies, and those characterized by somnolence; also those which correspond with the anatomical types of gummata and cerebro-spinal affections. Acute specific meningitis may be suddenly changed by the addition of apoplexy. These acute apoplectic seizures of cerebral syphilis are rather common. The writer believes that cutaneous disturbances of sensibility have been rather more common than usually mentioned in the text-books, and disturbances of the higher visual tracts distinctly more so; this includes especially bilateral homonymous hemianopsia, which the writer finds frequently of syphilitic origin. Focal signs may be wholly absent in some vascular cases. Often the symptoms of brain syphilis are of gradual, instead of sudden onset. At first they are chiefly mental, the patient becoming irritable, inattentive and forgetful, headache is not prominent, and disturbances in the special brain symptoms are often late in appearing. Somnolence is a frequent and characteristic sign of brain syphilis, improving with the other clinical symptoms, or deepening into coma, as the disease increases. Cases occur characterized by attacks, including those of an epileptoid character, usually focal or Jacksonian, with numerous associated symptoms, such as aphasia, anesthetics, vertigo, or mental symptoms. Disease in the blood vessels usually is found in these patients. General epileptic attacks, or "late epilepsy," are common in brain syphilis. A combination of trauma and syphilis is said to produce a variety of serious conditions. The writer believes that trauma, as a cause of cerebral syphilis, is rare. Syphilis, in its attacks on the central nervous system, has the tendency to make deposits, sometimes microscopic, in both brain and spinal cord. Clinically, the cere-

bro-spinal character may or may not be evident. Some cases seem to be cerebral, some spinal.

The relation of psychoses to syphilis is obscure. Maniacal and melancholic mental states, or dulness and sleepiness, merging into dementia, are ordinary clinical expressions of organic brain syphilis. Can these be distinguished from functional cases? The writer believes that there are a few cases in literature which indicate that a diagnosis of syphilis can be made in these cases, and a direct antisyphilitic treatment give benefit. Post-syphilitic dementia is in all probability due to vascular disease. In most cases of syphilitic mania, meningitis, or vascular disease, could be demonstrated. W. B. NOYES (New York).

DORMIOL IN EPILEPSY. J. HOPPE (Münchener med. Wochenschrift, April 29, 1902).

Dormiol has been used in eleven cases of status epilepticus, and it has been found that, so far as efficiency is concerned, it ranks equally with amylene hydrate, and has not any after-effects. The administration was per rectum in the form of two to three tablespoonfuls of a stock solution, 10 to 150, in from one-quarter to one-third liter of water. For continued use in epilepsy, dormiol is no more suited than is chloral or amylene hydrate, except, perhaps, in certain cases of epilepsy nocturna. In cases of epileptic confusion, with motor restlessness, it failed completely. JELLIFFE.

PHOTOTHERAPY AND NEURASTHENIA. P. JOIRE (La Semaine Médicale, 1902, No. 17).

The important modifications which one notes in the nervous system following the use of colored rays of light, or of decomposed light, induced this author to employ phototherapy in treating neurasthenic troubles. In his experience the red rays are especially to be recommended for this purpose, not only because of the sedative effects which they appear to produce upon the nervous system, but also because of their considerable power of penetration and of regulation exercised upon the blood circulation. The treatment by red light is particularly efficacious in cases of hyperesthesia, which constitutes, as is well known, the point of departure of most of the characteristic symptoms of neurasthenia, such as headache, vertigo, pain in the back, etc. In cases in which one sees, after the disappearance of painful symptoms, a certain degree of cerebral depression, it will be well to employ light cures of other orders, and to make, according to the state of the patient, a variation of color and intensity and manner of application. The calming action of phototherapy, and especially of exposure to red rays, seems also to have the power of increasing the strength of the patient, augmenting the appetite, regulating digestion, and governing general nutrition. In spite of their great susceptibility, neurasthenics undergo treatment with red light without difficulty, perhaps because the vibrations of this color are comparatively slow. JELLIFFE.

MULTIPLE NEURITIS. DANIEL R. BROWER (Medical Record, June 21, 1902).

The disease is the result of one kind of poison, and while the action of this agent may be limited to the peripheral portion of the neurone, yet there are cases in which the cell-body as well is impaired. The principal poisons producing multiple peripheral neuritis, are alcohol, lead, arsenic, and the toxine of various micro-organisms, especially those that produce diphtheria, influenza, typhoid fever, gonorrhea, syphilis,

leprosy, and beri-beri. In the typical cases there is a symmetrical localization of motor, sensory and vasomotor symptoms. In earlier stages the symptoms are the result of irritation of the nerve, in the later of destruction. Different cases vary in developing one set of these symptoms, lead paralysis, Landry's paralysis and tetany being distinctly motor; pseudo-tabes and leprosy being sensory; and erythromelalgia and Raynaud's disease being vasomotor in clinical type. The commonest form of multiple neuritis arises from alcoholism, and ordinarily presents a mixed type. Its diagnosis is based upon such evidences of chronic alcoholism as indicated by digestive, circulatory and nervous systems. The onset is insidious; the earlier symptoms are numbness and tingling, cramps and tremors, with painful symptoms and cutaneous anesthesia a little later, and sometimes a muscular hyperesthesia. The paralysis soon results in quadriplegia, with toe and wrist-drop, sometimes there is at first an exaggeration of the knee-jerk, followed by a loss of knee-jerk. Progressive atrophy occurs. Marked psychical disturbance sometimes occurs, due to the alcoholism.

W. B. NOYES (New York).

CLINICAL DIFFERENTIATION OF BRAIN SYPHILIS AND GENERAL PARESIS.

W. A. M'CORN (Brooklyn Medical Journal, February, 1902).

The writer reports a case with the following symptoms: A capable business man, after a week of general apathy, headache, and insomnia, becomes incoherent, irrational and appears greatly confused and stupid. The muscular coördination becomes so marked that it is nearly impossible for him to walk, talk or care for himself in any way. He had had syphilis three years before. Examination of pupils was negative, the knee-jerks exaggerated, no fibrillary tremor of the tongue or face; facial expression dull and apathetic. Romberg symptom extreme. No grandiose ideas, memory poor for recent events. Owing to his unsteadiness on his feet he was put to bed and treated antisypilitically. The patient improved for a short time. Three months after admission a divergent strabismus of the right eye, with ptosis, developed. Almost simultaneously the patient became somewhat filthy, mentally dull, and stupid. The diagnosis of paresis was made by eminent specialists, but is disputed by the writer, for the following reasons: Brain syphilis follows infection closely, from one year to ten. Paresis has a remoter syphilitic origin, and seems to be more the result of a parasyphilitic toxin. Mental stress is as essential a factor in paresis as heredity is insignificant. The course of the two affections shows a marked difference. In paresis it is slowly, but regularly progressive, the course of brain syphilis is extremely erratic. A degree of dementia out of all proportion to the duration of the disease is often followed by sudden and rapid improvement, to again lapse into a stupid, apathetic state similar to that found in the last stage of paresis. There is a wide difference in the mental symptoms, other than the intellectual defect. Paretics, as a rule, have a marked euphoria from the onset of the disease, accompanied by absurdly extravagant delusions, while the syphilitic is more depressed, and has hypochondriacal, melancholic delusions.

The physical symptoms of syphilis point almost invariably to focal and more or less limited lesions, while in paresis, to a diffuse involvement. General, tremulous and ataxic movements are not common to syphilis; the speech disturbances are not pronounced, and the headache in syphilis is persistent, diffuse, worse at night; while in paresis it is usually paroxysmal and localized. Optic neuritis is common in syphilis.

W. B. NOYES (New York).

Book Reviews

DIE PHYSIOLOGIE UND PATHOLOGIE DER COÖRDINATION. EINE ANALYSE DER BEWEGUNGSSTÖRUNGEN BEI DEN ERKRANKUNGEN DES CENTRAL-NERVENSYSTEMS UND IHRE RATIONELLE THERAPIE. VON DR. OTFRID FOERSTER, Assistent der Psychiatrischen Klinik der Universität Breslau. Gustav Fischer, Jena. G. E. Stechert, New York.

We believe this to be the first attempt at a monographic treatment of that most interesting of physiological functions, coördination, and of its pathological corollary, incoördination. Surely the importance of this subject has merited its separate treatment long before this.

The separate phases of incoördination, in varying nerve affections, have been but illy analyzed or brought into relation with each other. The present most excellent volume is worthy of the warmest praise. It is not only a credit to its author, as an evidence of his scientific acumen and energy, but is intrinsically of great value to the practitioner in all fields of activity, especially in those in which questions of neuro-muscular functions are involved.

The author first considers Physiology of Coördination, considering coördination of the muscles and their strength and the coördinating functions of the central nervous system; spinal, cerebral, and cerebellar coördination, and compound, or mixtures of these. In a separate chapter the general pathology of coördination is discussed.

The major portion (78-305) of the pages is taken up with a most careful and thorough study of coördination in tabes dorsalis, in which the entire musculature and its activities are utilized in affording abundant important facts.

The work is of great merit, even if largely taken up with the study of one diseased state, and will be welcomed by all students of neurology.

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THE DRUG HABITS AND THEIR TREATMENT. BY T. D. CROTHERS, M.D., Superintendent Walnut Lodge Hospital, Hartford, Conn. G. P. Engelhard & Company, Chicago.

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Original Articles.

A CONTRIBUTION TO THE RADICAL CURE OF EXOPHTHALMIC GOITER WITH THE ULTIMATE RESULTS
IN EIGHT CASES TREATED BY THYROID-ECTOMY.*

BY J. ARTHUR BOOTH, M.D.,
NEW YORK.

In a paper entitled "The Thyroid Theory in Graves' Disease," read before this Association, May 30, 1894, and in a second communication of May 30, 1898, the following conclusions were presented: (1) Cases of Graves' disease may be entirely cured by operative measures; (2) pathological and clinical evidence is in support of the view, that the symptom-complex is the expression of a primary neurosis, multiplied by a secondary glandular intoxication; (3) while the ultimate cause of the disease of the gland is still a matter of speculation, and a mortality of more than seven per cent. after operation, is reported, we cannot recommend operative interference as a routine plan of treatment; (4) sudden death may occur in the course of, or soon after, operation, and has not as yet received a satisfactory explanation.

Investigations during the past five years have not resulted in causing any material change in the above conclusions. Still

*Read at the annual meeting of the American Neurological Association, June 5, 6 and 7, 1902.

a study of the large number of cases treated surgically, and of the data derived from their observation for long periods after operation, as well as the results of operative measures other than thyroidectomy, have necessitated corresponding modifications in my views.

Continued and general interest has been excited in the problem of solving the pathogenesis of so curious a symptom-complex, recognized under three names, having three diagnostic symptoms, for which, in explanation, three theories have been advanced, and three surgical measures recommended for its cure; and although the time is not yet ripe for accepting any exclusive theory of the causation of the disease, nevertheless there seems to be more of an approximation of all.

In the attempt to explain the different grouping of symptoms, three classifications may be adopted: (1) those cases dependent on changes in the central nervous system; (2) those due to disease of the cervical sympathetic; (3) those arising from excessive or altered function of the thyroid gland.

In the first class of cases, there are distinct lesions in the medulla, which have been verified by a number of autopsies. Another reason for assuming that the origin of the symptoms is in the central nervous system, is the evidence derived from clinical observation, such as (a) the predominance of the disturbances of the vagus at its central origin in the medulla, as demonstrated by the excessive tachycardia; (b) the occurrence of cases in which there is no goiter and no evidence (operative or by autopsy) of disease of the cervical sympathetic; and finally (c) the frequency of sudden death attributable to minute hemorrhages. In this group of cases no benefit is to be derived from operative measures.

The second class of cases is characterized chiefly by symptoms referable to the sympathetic system; abundant evidence of this being furnished both by cases and observations. The results of a number of autopsies have also shown lesions of the sympathetic, and especially of the inferior cervical ganglia; the usual change found being a thickening, which may be unilateral or bilateral. In conclusion, most important in support of this view, are the numerous recoveries recently reported from oper-

ations on the sympathetic. Rehn, of Frankfort, in 32 cases of resection of the sympathetic, reports as follows: 28 1-10 per cent. as cured, 50 per cent. improved, 12 1-2 per cent. unimproved, and 9 3-10 per cent. deaths. Jennesco, in 15 cases, 6 were cured, 4 improved; in 5 sufficient time had not elapsed to give results. There were no deaths.

Under the third, and last classification of cases, it now remains for us to consider those arising from excessive or altered function of the thyroid gland. In this class we have positive proof of changes in the thyroid in a very large number of instances. This fact is so well known and acknowledged by all that it does not seem necessary to do more than refer briefly to this part of the subject. We find enlargement of the gland, involving the whole glandular tissue, with the vascular structures greatly in excess. Certainly, I know of no case in which the gland has been found normal after death. Our main reasons, then, for assuming that these cases have their origin in the thyroid are (a) the study of clinical evidence; (b) the results of experimentation; (c) post-mortem findings; (d) results of operative measures.

Most important in support of this view are the records of Kocher, Schultze, Kummel, Mikulicz, Rehn, Moebius, Jabouley, Jennesco, and others. Schultze and Rehn report that in 319 cases, 175 were cured (51 per cent.), 89 improved (28 per cent.), 13 unimproved (4 per cent.), 41 died (13 per cent.).

Rehn, of Frankfort, regards the thyrogenesis of the disease as proven, and states that the thyroid gland dominates the disease and that it is always changed even if this is not visible externally.

Renbach, of Breslau, reports the following results from the clinic of Mikulicz; of 18 patients treated exclusively by internal medication for a year or more, 17 recovered from the operation, 1 died of secondary hemorrhage. The cure was permanent in 10 cases, 8 of which had been observed 4 years. One patient who had been given up by a physician was cured. Of the seven remaining patients, all were materially improved. Kummel, of Hamburg, gives the following results in 177 patients; 57, 6 per cent. cured; 26, 5 per cent. improved; 2, 3 per

cent. unchange; 13, 6 per cent. died. Certainly results such as these prove conclusively that in a large proportion of patients the thyroid is the pathological factor. As additional evidence, I now wish to report the present condition of seven cases that have been under observation for some time.

Case I.—The patient, Louise E——, aged twenty-four years, was first seen January 23, 1893. The family history is entirely negative. She never had any illness worthy of note up to the date of the present trouble. About two years ago she first noticed enlargement of the neck, and three months later the eyes became affected. The patient is positive that there were no heart symptoms until six months later, when palpitation, throbbing in the vessels of the neck, shortness of breath, and flushing of the face appeared. All these symptoms gradually increased in severity, and in addition there was marked insomnia, because of the tumultuous action of the heart. Both eyes are very prominent, especially the left, and the lids do not follow the movements of the eyeballs. The pupils are moderately dilated, reacting to light and accommodation. Vision not impaired and fundus normal.

The enlargement of the thyroid is marked, the right lobe being the larger. On inspection, pulsation is quite noticeable over this region along the sides of the neck. Over the middle of the thyroid the neck measures fourteen inches. The pulse is 150 and of high tension. The apex beat is diffused, but no murmur is present. Respirations, 24 to the minute. Measurement over bust thirty-one and one-half inches, and on full inspiration thirty-two and one-fourth inches. During a period of six months, from January to July, 1893, the patient received daily applications of galvanism and appropriate internal medication. At the end of the above period there was some improvement in all the symptoms, including a slight reduction in the size of the neck, and the eyes were less prominent. During July, August, and September, the patient received no regular treatment, but faithfully carried out my instructions as to resting several hours each day. After this time she relapsed into her former condition; the exophthalmos was well marked, and the right lobe of the thyroid very prominent. Further treatment failed to make any material alteration in her appearance, or to cure the many subjective symptoms from which she suffered; so operative interference was considered and decided upon.

The operation was performed by Dr. B. F. Curtis on November 11, 1893. A right transverse incision was made just below the hyoid bone and a vertical incision from the inner

end of this at the median line. The flap thus made was turned back and exposed the right lobe of the thyroid. There was but little bleeding, the vessels being carefully dissected out and tied as found. A supernumerary lobe was found attached to the inferior angle and pressing directly upon the trachea; this was removed. The entire exposed mass was then separated from its bed and from the trachea, the isthmus ligated, and the whole right lobe removed.

During the operation the pulse was between 180 and 200, irregular and intermittent, but respiration continued normal and no stimulation was necessary. By evening she had made a good recovery from the ether, complaining of severe pain in the throat. Voice not husky and of good strength. Up to the fourth day after the operation, nothing occurred worthy of note; the patient then had much nausea and vomiting, accompanied by a sharp rise in temperature. These symptoms continued for two days and then rapidly disappeared. On the tenth day the dressing was removed for the first time, and the wound was found healed by primary union.

The course of the case after this was satisfactory, and on the sixteenth day she was discharged from the hospital.

Inspection of the specimen after removal did not reveal any great degree of vascularity; it was homogeneous in appearance and hard in consistence. Microscopically, the tissue showed the structure of normal thyroid gland with the alveoli moderately distended with hyaline material, and in places thickly crowded small cells, both in the alveoli and in the stroma, but principally in the latter.

May 30, 1894, seven months since the operation, there has been a progressive and decided improvement in all the symptoms; especially is this so with regard to the various nervous phenomena, viz.: insomnia, restlessness, flushing of the face, excessive sweating, and palpitation. The eyes are less prominent, and the pulse now varies between 96 and 110, as compared to the former ratio of 120 to 160. The appended table shows the pulse average for nine months:

AVERAGE OF PULSE RATE:

August, 1893, 148; September, 1893, 156; October, 1893, 136; November, 1893, 146; December, 1893, 120; January, 1894, 120; February, 1894, 110; March 1894, 104; April, 1894, 104.

For the past six years she has been employed in one of the large department stores, being on her feet most of the time from eight o'clock in the morning until six at night, not missing a day

from her work, and during this period she has not been disturbed by any of her former symptoms.

An examination made on this date (8½ years since the operation), shows that the prominence of the eyes is still present, but to a much less degree; the wide staring expression has entirely disappeared. The neck, formerly 14¼ inches, now measures only 13 inches. The tremor has disappeared also. She states that she has no palpitation, dyspnea, or excessive sweating; nor is she troubled with insomnia. The pulse is 80. All of the above symptoms were present to a marked degree before the operation, so that from her present condition I think we are justified in believing her cured.

Case II.—Anna D——, aged twenty years, single; seen April 23, 1893. Three years before she noticed enlargement of the neck and three months later a prominence of both eyes. She became very nervous, could not sleep, and was very much disturbed by frequent attacks of palpitation. The right lobe of the thyroid was removed on May 11, 1893. Marked improvement in all the symptoms followed. One year after the operation there was entire absence of any exophthalmos; the pulse, formerly 140, was down to 100, and the nervousness had disappeared. On April 26, 1902, nearly nine years since the operation, her condition was satisfactory; there was no prominence of the eyes, and the pulse was 82.

Case III.—Nettie D——, aged forty-two years, single, was seen June 22, 1894, and the following history obtained: Twelve years ago the patient received a severe fright, the nature of which she will not give. She was very much prostrated and became very nervous. Six months later she noticed a bunch on the right side of the neck, which gradually increased in size and finally extended over to the other side. Two years ago she became very much annoyed by frequent attacks of palpitation and shortness of breath after slight exertion, also by a throbbing in the vessels of the neck. Within the last year the eyes have become very prominent. Recently she has passed large quantities of urine, and has been under treatment for diabetes.

Examination revealed all the symptoms of the disease to an extreme degree. She was admitted to St. Luke's Hospital on September 24, 1894, and, no kidney complications being found, the operation of partial thyroidectomy was performed by Dr. Curtis on October 1, 1894. Shortly after the effects of the ether had passed off there developed a high degree of fever; the patient rapidly passed into a comatose condition and finally died twenty-four hours after the operation. An examination of the urine revealed a large percentage of albumin, hyaline and granular casts. No autopsy was made, and therefore, it is difficult

to arrive at any conclusion as to the real cause of death; but from the examination of the urine and the symptoms it is probable that the final condition was one of uremia and not to be explained by the sudden absorption of an excess of the secretion of the thyroid gland.

Case IV.—Nellie C——, aged seventeen years, single; seen November 5, 1895. When six years old, a sister, taking her in her arms, made a pretence of throwing her out of the window. She was very much frightened, and an attack of what was called brain fever followed. She was confined to the bed for several months, and during this time had a number of convulsions, but finally made a good recovery. She remained well until the appearance of menstruation six years later; about this time, when thirteen years old, a swelling of the upper lids of both eyes was noticed, which has gradually increased and now has become so noticeable as at once to attract attention. This symptom is more marked in winter than in summer.

She now complains of frequent attacks of palpitation of the heart, accompanied by throbbing in the neck and profuse perspiration; also of general nervousness and occasional headache. She has never noticed any prominence of eyes, enlargement of the neck, or swelling of the hands or feet. On examination the patient presents the appearance of a case of Graves' disease. When we examine the eyes, however, no exophthalmos is discovered, but instead a very marked and peculiar edema of both upper lids. It is not a true edema; no pitting follows pressure, and it does not cause the closure of the lids, such as is produced by ordinary edema. Movements of the eyes and lids are harmonious. On inspection there is no decided prominence of the thyroid gland, but on palpation swelling and a diffused hardness of both lobes are made out. The heart action is agitated and pulse rate rapid, averaging 120 beats to the minute. With the exception of loud hemic murmurs at the base, the heart is normal. Face, neck, and both hands are covered with beads of perspiration. There is a slight tremor of the fingers.

One month later (December 5th), prominence of the left eye appeared. Having been unable to do any work for some time, even to attending to minor household duties, the patient willingly consented to operative interference, and on December 15th she was admitted to St. Luke's Hospital, where a few days later the right lobe of the thyroid was removed by Dr. B. F. Curtis. Her recovery from the effects of the operation was rapid and the progress of the case up to the present time has been entirely satisfactory. It is now seven years since the operation, and during this time there has been a complete disappearance of all nervousness; the throbbing and palpitation have ceased, and

with two exceptions the pulse has not been above 90, most of the time varying between 80 and 86; no exophthalmos. Although the improvement in the symptoms just mentioned has been marked, the peculiar edematous swelling of the eyelids still persists.

Case V.—Amelia B——, aged twenty-one years, single, domestic; seen with Dr. Curtis November 29, 1895. Present trouble began four months before, when she felt a movable, painful swelling, about the size of a cherry, on the left side of the throat, which caused her pain on swallowing or talking. About a month later it had grown to about the size of a pigeon's egg and was quite visible. She became very nervous, could not sleep, and had attacks of palpitation. Examination did not reveal any prominence of the eyes. Pulse rate, 110 and irregular.

The left lobe of the thyroid gland was removed; the patient made a good recovery from the operation and was discharged from the hospital on December 2, entirely relieved of the pressure symptoms from which she suffered. Three months later the nervous symptoms had disappeared, the pulse became normal, and when seen on May 18 last, she was perfectly well, the pulse being 74; no nervousness or insomnia.

During the past two years no examination has been made, but up to that time there had been no return of the symptoms of which she had complained.

Case VI.—Addie T——, aged thirty-five, married. This patient was referred to me by Dr. Curtis on January 10, 1896. Her general health was good up to ten years ago; then she first noticed a swelling on the left side of the neck, which gradually increased in size. Palpitation of the heart and general nervousness appeared five years later. At no time had she noticed prominence of the eyes. Examination revealed a decided enlargement of the left lobe of the thyroid, throbbing along the vessels of the neck, and a pulse of 120. The eyes appear normal both in size and movement.

One year ago her sister died with symptoms of the disease, and now another sister has the same trouble.

On January 11, 1896, partial thyroidectomy was performed by Dr. Curtis, the left lobe being removed. No shock followed, and she made an uneventful recovery from the operation. Two years later all nervous symptoms had disappeared, there had been no tachycardia and the pulse was 84.

Case VII.—Mabel C——, aged twenty years, single. This patient presented all the symptoms of the disease to a marked degree and when I saw her on November 20, 1896, her condition was a miserable one. Enlargement of the neck was first noticed one year previous, which was followed by general ner-

vousness, tremor of hands, excessive sweating, attacks of dyspnea and palpitation. She complained also of frequent attacks of diarrhea. The pulse rate was very rapid, 160 to 180. Both eyes were prominent. After six months' rest in bed, and having received no benefit from either this or many therapeutic measures, she was prepared for operation, and on June 28, 1896, the entire right lobe of the thyroid gland was removed by Dr. Curtis. She returned home February 19, 1897, unimproved. Since then she has certainly been in better condition, and when I saw her on May 8, 1902, the eyes were not so prominent, the remaining lobe of the thyroid was smaller, the nervousness was less; she was seldom disturbed by palpitation, and the pulse was 100.

Case VIII.—Mary M——, aged thirty-six years, single; bookkeeper. Patient referred to me by Dr. David Webster on October 12, 1897. Onset of symptoms one year previous, consisting of general nervousness, prominence of eyes, rapid pulse—128 to 130—tremor of hands, and enlargement of neck. Admitted to St. Luke's Hospital on October 28, and on November 13, 1897, the right lobe of the thyroid excised by Dr. Curtis. Her recovery from the effects of the operation was uneventful, and she returned to her occupation as bookkeeper in five weeks, feeling better. When seen on April 26, 1902, she stated she had been very much improved in every way. She is less nervous, sleeps as well as ever. She is now able to write and keep her books neat; formerly she was not able to do this on account of the tremor of the hands, which was so marked as to resemble that of chronic alcoholism. She has hardly any palpitation now, and the pulse varies from 80 to 90. Prominence of eyes hardly noticeable.

It will be seen from the preceding that of the eight cases, six were permanently cured, one improved and one died.

The cause of sudden death, after or during the operation, is somewhat difficult of explanation, but to some extent may be attributed to a faulty technic in removing the vascular goiter, as well as to the reduced vitality of the patient, whose heart has been weakened; or to renal complications. The theory that it may be due to the absorption of the thyroid juice does not now seem tenable, owing to the care at present exercised in preventing this in the removal of the diseased part. In the third case, in which death occurred forty-eight hours after recovery from the effects of the ether, there was a history of an attack of diabetes and a specimen of urine obtained while the patient was in a

comatose condition, showed a large quantity of albumin and a variety of casts.

The writer acknowledges the difficulty of separating and placing the individual case in one of the given groups, in order to select the proper operative measure; especially is this so at this time when all is as yet so obscure concerning the true pathology of the disease. Still, with greater care in considering the onset and course of the disease, giving due weight to the hereditary element, if present, and finally noting which of the symptoms first appeared; the grouping suggested may prove not merely of theoretical, but also of practical assistance. In seven of the eight cases, the enlargement of the thyroid was the first symptom to appear, and the satisfactory results obtained in six were due in all probability to the operative measures upon the gland itself.

In another class of patients there is no enlargement of the gland, and in these one should consider the advisability of a resection of the sympathetic. Since the introduction of bilateral resection of the sympathetic, it has been performed with sufficient frequency to permit a comparison of its results with those of thyroidectomy, and from the reports of cases thus far published, we are led to conclude: that, with the latter, sudden deaths are more numerous, and the relief from the exophthalmos less common. In the eight cases just reported, exophthalmos was present in six. After operation it disappeared in three and was improved in three. Although the results accomplished in my cases have been so satisfactory, I am not prepared to state that the treatment by operative measures is the best and most efficient; but it seems to me, that more marked and rapid benefit has been obtained under surgical than medicinal treatment. Hence the former must receive due consideration, especially after we have convinced ourselves of the futility of other measures.

If the case does not improve under the customary treatment, too much time should not be allowed to elapse before resorting to the knife, for too prolonged a delay materially increases the risks of the operation and renders success less certain and permanent.

Reviewing all these facts, then, we may formulate the following conclusions :

(1) Cases of Graves' disease may be completely cured both by thyroidectomy and bilateral section of the sympathetic.

(2) In view of the fact that some cases are cured by internal medication, there must be a certain proportion in which the affection does not induce structural changes in any organ.

(3) No theory can be regarded as adequate without taking into consideration the function of the thyroid gland.

(4) Three factors must be considered in the production of the disease : (a) The central nervous system ; (b) the connecting fibers : sympathetic and vagus ; (c) the thyroid gland.

(5) A lesion of one of these parts may produce a specific alteration in the others, the consequences of which, together with the exciting cause, may give rise to the symptoms of Graves' disease.

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ACUTE HEMORRHAGIC CORTICAL ENCEPHALITIS.¹

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The study of the acute non-purulent inflammation of the gray matter of the brain has received much attention during the last decade especially, but so much space and time has been devoted to the subject of the acute hemorrhagic inflammation of the gray matter surrounding the floor of the fourth ventricle, and especially the canal of Sylvius, that the other, far more important study of cortical affections of this character, has been pushed into the background. This in a large measure is, and was, due to the striking picture presented by Wernicke's acute encephalitis hæmorrhagica superior, whereas the cortical form is either frequently mistaken on the one hand for leptomeningitis, acute mania or, occurring as it so frequently does, intercurrent or after an acute infectious disease, is either overlooked or taken for hemorrhage or softening. You will easily recognize the importance of properly diagnosing this disease, not only for a scientific reason, but also because in favorable cases prompt and, in my experience, continuous treatment may effectually remove the pathological condition, and in a measure prevent the remote consequences.

This variety of encephalitis is called by the German authors The Strümpell-Leichtenstern form. Strümpell² first directed the attention of the medical world again to this subject by his paper on infantile cerebral palsies, as being frequently caused by encephalitis, and many years before this (1865) Virchow³ had made exhaustive studies of the pathology of encephalitis of the new born.

In 1885 Leichtenstern described a case of acute non-purulent encephalitis occurring during the course of an epidemic of cerebro-spinal meningitis, and he was the first to call up the thought that the disease was due to an infection. The influenza

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epidemic of 1889-1891 brought out typical cases. Those of Fürbringer⁵ especially, Koenigsdorf⁶ and Schmidt⁷ deserving special mention.

After the bacteriological origin had been denied by Strümpell, Brickler, Goldscheider and others, although in the typhoid, diphtheritic and other zymotic diseases, streptococci had been found, Pfhul, and especially Nauwerk, by finding Pfeifer's influenza bacillus, were enabled to furnish the proof that the disease was due at times at least to direct bacterial invasion of the brain and not to ptomaine or leucomaine intoxication or to secondary infection.

Oppenheim's monograph on encephalitis in the Nothnagel series, to which I am indebted for most of the above historical data, contains a complete bibliography on the subject, up to 1897.

The etiology of acute hemorrhagic encephalitis of the cortex is usually directly or indirectly bacteriological or zymotic. Either the inflammation is due to the direct invasion of the cortex of the brain by the bacteria which cause the primary disease, as for instance in influenza, where we have positive evidence, or in diphtheria and typhoid, where we surmise, although as yet the bacteria have not been demonstrated; or it is due to the peculiar zymotic agency or the ptomaines of the other acute infectious diseases, when it occurs as a complication of measles, scarlatina, etc.

Whether alcohol, carbonic oxide, ptomaine poisoning from fish or meat, or the other metallic poisons can produce an acute encephalitis of the cortex, as they are supposed to do in the gray matter of the pons or cord, I doubt; alcohol is the most common direct or indirect cause of Wernicke's form of encephalitis. I should, however, feel inclined to place infection and contagion as the primary if not the only cause of encephalitis of the cortex, although in some of the reported cases of Wernicke's disease, 15 in all according to von Monakow, the cortex and the gray matter of the basilar ganglia have been involved occasionally.

Sexes are equally often affected. If all the cases were published I have no doubt that early childhood up to puberty

would be found to be most frequently affected, principally because the acute infectious diseases are most frequently found at this period of life. Most reported cases are found in adults. General weakness and loss of strength do not seem to be predisposing causes, for, like cerebro-spinal meningitis, primary encephalitis is very frequently seen to attack strong, sturdy, robust individuals, previously healthy. The amount of general exhaustion during the course of an infectious or contagious disease does not seem to bear any relation to the probability of an intercurrent or subsequent encephalitis. Encephalitis of the cortex is most frequently seen during the course of influenza epidemics. During such epidemics primary encephalitis is frequently seen, where the influenza attacks the brain alone; or, to express it more appropriately, the predominating symptoms are on part of the brain, with an absence of respiratory or intestinal symptoms. Encephalitis may occur during an attack of ordinary influenza, or it may follow, either in the course of a few days, or even after weeks or months.

Encephalitis, Lichtenheim's celebrated case, may occur during an epidemic of cerebro-spinal meningitis without any involvement whatever of the meninges. Of the acute infectious diseases I should say that measles is most frequently complicated with encephalitis, next in order typhoid, scarlatina and diphtheria. In these diseases it usually occurs when the disease itself is on the wane, or during convalescence.

Trauma is a frequent cause of acute hemorrhagic encephalitis, and in a twofold way, first in a purely mechanical way. The brain is either bruised by concussion and then a reaction of inflammatory softening occurs, or without any fracture whatever the bruised brain cortex becomes the seat of a circulatory infection; micrococci or spalt-piltze, which are circulating in the blood, are deposited and set up an inflammation in the bruised spot.

Pathological Anatomy—Viewed in its relation to the immediate and remote effects of encephalitis, the pathological anatomy can be considered from two standpoints, the acute stage and the residual stage.

The most frequent form of acute encephalitis in the cortex,

as well as in the gray matter around the canal of Sylvius, is the acute hemorrhagic form according to Fürbringer, who, to my knowledge, at least, described the first cortical cases. The macroscopic appearance of encephalitis is that of circumscribed areas varying in size from a pinhead to a silver dollar; multiple, rarely single, and often symmetrical in distribution, as case No. I will show. These areas are most frequently met in the cortex, but are found also in the white matter of the basilar ganglion. They are bright red in color in the recent cases, but the color varies as the blood pigment changes in color, to a purple-brown, yellowish-brown, or yellow, the area is more succulent than the surrounding tissue, because it is infiltrated with serum, and is slightly raised above the general level of the surrounding cortex and, macroscopically at least, the margins are somewhat sharply defined. Microscopically there is a dilatation of the arterioles and capillaries, and transudation of red and white blood corpuscles into the surrounding tissue, and later on pigment particles, phagocytes and an increase of the spindle cells.

Like unto anterior poliomyelitis the disease is, by consensus of opinion, supposed to be vascular in its origin. What is more interesting to us as neurologists is the fate of the nerve elements, cells and fibers in the area of this acute inflammation. The ganglionic cells are affected, but only secondarily, the protoplasm becomes swollen, more translucent, the nucleus less distinct, afterward the cells become more opaque, and at times the protoplasm is seen to break up, and there seems at times to be a total destruction of cells, at others the cells shrink, become deformed and the nucleus becomes crenated. But this is not a parenchymatous process, but is interstitial in its nature. Aside from the hemorrhagic form Oppenheim has described a yellow or white inflammation in which the macroscopic appearance shows an absence of the engorgement of the arterioles and capillaries, and an absence of the transudation of the red blood corpuscles. In other respects the microscopic anatomy is the same.

The above processes, both the hemorrhagic and non-hemorrhagic may terminate in a complete *restitutio ad integrum*. This is shown not only by the clinical cases in which there has been

a complete recovery from all symptoms, but more satisfactorily by the case observed by Oppenheim. This case was that of a young girl who completely recovered from an attack of encephalitis and died six months later of another disease. The autopsy made by Oppenheim showed a complete absence of all traces of the former encephalitis.

Far more frequently, in the favorable cases which terminate in recovery, some defect of the cortex is found which is the cause of either the incomplete recovery from paresis or of the subsequent development of epilepsy.

The first of these defects is the formation of scar tissue which is seen very frequently. Nerve fibers, especially tangential fibers, are involved in the scar according to a case reported by Buchler. Strümpell contends that the cortical scars seen in children's palsy are due to this form of encephalitis. The second is the formation of cysts. Cortical brain tissue shows a variation in its reaction to inflammation, from the other tissues of the body. In the latter the tendency is to form scars. In the brain the opposite often occurs, cysts being formed, which frequently enlarge by a continuous breaking down of their walls.

In this connection I wish to report a case because, in my mind, it shows what the end state of acute hemorrhagic encephalitis may be, although the early history of the case is lacking and cannot be had.

The patient was brought into the Cincinnati Hospital with the history of having fallen down a flight of steps during an epileptic seizure. He was unconscious and presented hemiplegia of the left side of body, with great rigidity of muscles. The diagnosis of surface hemorrhage was made, the patient was operated upon and obtained relief for a few hours, but subsequently died.

Autopsy—Excessive hyperemia present over surface of both hemispheres. Punctate hemorrhages are seen over surface of both hemispheres, varying in size from a pinhead to a split pea. (Probably of recent origin.)

On the tip of frontal convolution of each side there is a dark spot, about the size of a dime. On section the dark spot is found to be the outer wall of a cyst cavity of about the size of a hazel nut. The wall at one side is thicker and appears laminated. The fluid contents are dark brown in color.

The temporo-sphenoidal lobe on right side shows a similar cyst, but it has ruptured, causing a laceration of the surrounding tissue to size of a hen's egg, and extending to internal capsule, with a large extravasated blood clot. Four other cysts were found on the surface of both hemispheres; all of about the same size. The wall of these cysts are yellowish-brown in color, soft in consistency, in state of disintegration. Fresh hemorrhagic spots are seen in the walls. The surrounding tissue appears soft, granular and infiltrated. The cavities are conical, with apex toward cortex; around the apex there is a laminated structure, dark-brown in color, which microscopically is shown to be an old blood clot.

The pia mater is adherent over some of the cysts. Microscopically there is found in the wall granular debris, leucocytes, a few red blood corpuscles, disintegrated ganglionic cells, giant cells, very little connective tissue.

I have no doubt in my own mind that these hemorrhagic cysts had their origin in acute hemorrhagic encephalitis. This opinion is backed up by Bergmann in a paragraph devoted to the discussion of the treatment of Strümpell's form of porencephalic defects, in which he speaks of the possibility of these late permanent cysts which occasionally follow encephalitis being the cause of cortical epilepsy and therefore objects of surgical interference. Starr, in "Brain Surgery," publishes a similar case, and Henschen and Dahlgren have collected 17 cases of a similar character which have been operated upon.

That multiple sclerosis may be the late stage of encephalitis is a possibility, but that the clinical disease which we know under this name is the same, is very much doubted, the consensus of opinion being that it is a disease of different origin.

Oppenheim calls attention to the fact that encephalitis is frequently associated with sinus thrombosis and thrombosis of veins, but usually in cases in which clinically there was a well-marked chlorosis.

The clinical history is best illustrated by the following cases:

Case II—Mrs. M., married, mother of four grown children, no miscarriages, has always been well, strong and sturdy. Present trouble began by sudden fainting spell. Dr. C., with whom I saw the case in consultation, found patient in state of extreme collapse, pale, blanched lips, no radial pulse, heart's action very feeble and rapid; no rise of temperature, stimulants were administered and the collapse passed off, and patient, though weak and with a headache, passed several comfortable hours, when a second collapse set in with same characteristics as first. This lasted but half an hour, and on a return of the circulation

patient appeared not only delirious but almost wildly maniacal. She remained in this condition all night and was seen by me on the following morning.

Examination—Sturdy, well-developed woman, 40 years of age, good, healthy nutrition. Mental condition—patient had been very restless all night—constantly attempts to rise in response to idea of going somewhere, going home; answers imaginary voices which she locates as coming from ceiling or the far corner of room, murmurs and talks to herself. Has very few rational intervals; during these she answers questions intelligently, can be aroused to recognize nurse and doctor and her general surroundings. The mental condition, in a few words, was characterized by extreme restlessness, delirium, hallucinations, visual and aural, reactive talk to these hallucinations, and sleeplessness. Pulse 100 to 110, weak, thread-like; temperature 102 to 104; no complaints of pain or headache, no rigidity of muscles, no retraction of head, no opisthotonos. Pupils normal in size, react to light. External muscles normal. Slight paresis of right side of face and tongue. Sensation to touch and pain normal. Upper and lower extremities weak, reflexes normal. No ankle-clonus. Kernig's sign is absent. No Babinski. Passes urine and feces in bed.

The violent delirium occurred at intervals for the first week; during the quiescent period patient was semi-comatose, after third day was no longer rational. The fever continued for the first week; at no time was there rigidity or opisthotonos; after first week there was muttering delirium of a low character, marked weakness of both arms and legs. Patient died on the 14th day. No autopsy.

Case No. III—Henry W. M., *aet.* 46, was admitted to "L" neurological of Cincinnati Hospital on April 27, 1898. Discharged May 28. Occupation, carriage maker. Is unable to give any account of himself. No evidence of syphilis. Family state that his illness began ten days ago with headache, dizziness and general malaise. Was treated at first for typhoid. Delirium began a week before his admission.

Present History—Patient was admitted in a state of delirium, muttering in character, with great restlessness, jactitation, fingering of sheets, constant attempt to raise himself with desire to get out of bed, but with an inability to do so on account of general weakness. There is more or less somnolence, with an inability to comprehend questions because his attention cannot be fixed. Seems to have constant aural and visual hallucinations. Temperature normal. Pulse 102, weak, small.

Examination—Mental condition as above. No involvement of pupils. Ophthalmoscopic examination cannot be made. Ex-

amination of muscles of eyes normal. No facial paresis. On account of delirium and inattention, unable to say accurately whether there are any sensory disturbances.

Muscular power diminished all over without any marked localized paresis. Tendon reflexes present. Passes urine and feces involuntarily. After three or four days the delirium became less marked, patient has lucid intervals, and during these it has been found that he has a well marked amnesic aphasia with paraphasia.

May 24—Condition has cleared up entirely as far as sensorium is concerned. Has no delirium, no hallucinations, can understand what is spoken, also reads intelligently. Amnesic aphasia and paraphasia well marked.

May 28—Is able to walk out of hospital, amnesic aphasia and paraphasia still present, and existed to a slighter degree three months later, when patient disappeared from view.

Case IV.—Mrs. F., *aet.* 44, married, has 3 grown children, never been seriously sick before. Developed typhoid in March, 1900, ordinary, medium severe case, without any serious complication or malnutrition. During period of febrile decline patient began to complain of headache and vertigo almost at once, not more than a half day elapsing; onset of delirium with hallucinations, especially aural in character, associated with talking in an incoherent manner. The facial expression was that of anxiety and distress, mental in character, an inability to recognize her surroundings. The temperature rose at once to 103, pulse 110. Restlessness, sleeplessness and delirium, together with the high fever, continued for 3 or 4 days. It was noticed that the patient had a difficulty in expressing herself during the state of delirium. After the latter had passed the headache still continued; the patient could be confused very readily by cross-questioning; slightest exertion showed the presence of mental confusion and weakness.

Examination—Mental condition as above, left pupil larger than right, no optic neuritis, both pupils respond to light, no paresis of external muscles of eyes. Slight paresis of lower half of right facial, of right side of tongue and of right arm; right leg not affected. Well-marked amnesic aphasia. Four or five days later the delirium passed away; the amnesic aphasia however continued. The aphasia gradually improved, but never disappeared completely. The difference in pupils also remained.

May, 1901—Patient has had an epileptic seizure. Those who were with her are unable to tell anything more than that the convulsion was general in character and followed by deep coma and sleep. When I arrived an hour later patient remem-

bered nothing of her attack and does not know whether it began in the right arm or face. Patient has been under constant treatment since then and has not had another attack.

The above case is characterized by the mildness of the general symptoms, the rapid disappearance of the delirium and the great local damage done to cortex, viz.: the aphasia, which never disappeared entirely, and the secondary epilepsy.

I have selected the above cases as typical cases, but I would like to call the attention of this Association to another group of cases which we see frequently and of which the following is a type.

Case V.—Mary W., *aet.* 15, third child, parents healthy, has never been sick before. Was called in consultation by Dr. B. on account of the development of violent delirium during the third week of a bad case of typhoid. On account of the presence of a very weak heart, and the refusal to take nourishing food, large doses of whiskey were given, together with a 1-40 gr. of strychn. sulph., 4 or 5 times a day, the average quantity of whiskey taken during the 4 hours for one week previous to the outbreak of the delirium being $1\frac{1}{2}$ pints. The condition of patient resembled an acute attack of delirium tremens very closely. The delirium was violent, hallucinations massive, no ability to recognize parents or surroundings. Restlessness, tossing, insomnia.

Examination—Girl well developed, strong muscular system, somewhat emaciated, mental condition as described above. Pupils and external muscles of eyes normal. No defect of muscular system or sensation in any part of body. This delirium lasted with more or less severity for a week, but gradually became less and less intense, being displaced by an increased tendency to somnolence and sopor, which state continued for another week without actually passing into stupor or coma. Temperature all this time 102 to 103. Pulse rapid and weak. Respirations rapid, no opisthotonos. Then a gradual return to consciousness with a gradual increase in the amount of food taken, and after 4 or 5 weeks the consciousness became normal and was followed by complete mental and physical recovery, and after five years patient is still strong, vigorous and active.

In another case of this character the stupor lasted for 3 or 4 weeks after the delirium had passed away, and also ended in recovery.

You will see at a glance that the last mentioned cases are not febrile psychoses. I wish merely to call your attention to this class of cases, making only a hypothetical diagnosis, in the absence of localizing signs, placing the seat of the encephalitis

in the frontal lobes, terminating in a complete recovery of the tissue.

The assumption of an encephalitis for the explanation of these cases is strengthened by the experience which we have of the large number of so-called febrile psychoses which end in incomplete mental recovery, namely, the recovery with mental defect of various grades.

SYMPTOMATOLOGY.

As clearly seen from the foregoing cases, the symptomatology is varied, but the numerous signs and symptoms can easily be grouped under three heads, or rather into three periods, in chronological order, namely: (1) The period of onset and development; (2) the period of focal signs and symptoms; (3) the permanent signs and remote consequences.

The first and second group overlap each other more or less, but are sufficiently distinct to be separated.

The general symptoms may be preceded by indistinct prodromal symptoms for a day or two, such as headache, vertigo, general malaise, but as a rule the onset is sudden, rarely with a chill, usually with a high fever or the exacerbation of a previously existing fever, and there is rapid development of the mental symptoms and the climax is reached in from 24 hours to four or five days or a week. The developed mental symptoms resemble very closely an attack of acute delirium tremens, so much so that Wernicke, who recognizes chronic alcoholism as the most potent factor of encephalitis hæmorrhagica superior, at first was inclined to attribute the mental characteristics to chronic alcoholism rather than to encephalitis. Boedker showed however that this mental state occurred in encephalitis of the cortex without there being any evidence of chronic alcoholism.

Case No. III illustrates perhaps best the general signs of the acute violent form of cortical encephalitis. The cortical form usually affects adults as often as children. The onset in primary encephalitis is usually sudden, with headache and vertigo and a sense of general malaise. A chill, sometimes, though not often, ushers in the rise of temperature, which is at once high, 102 to 104, with rapid, small pulse. Restlessness and a desire to move about and not lie quiet precedes the delir-

ium; collapse, as seen in Case No. II, is not a frequent manifestation. After the development of the delirium, nearly all cases present the same manifestations, the differences in my experience being one of degree and not character. Restlessness, jactitation, sleeplessness, hallucinations both aural and ocular, together with those of general sensation, keep the patient on the alert. Frequently there is a constant muttering of incoherent sentences, but not infrequently there is a response to the aural or ocular hallucinations, calling to supposed friends, answering voices which they hear; frequently maniacal character of movements or speech, constant rambling conversation, smoothing bed sheets, picking at bed clothes, removal of imaginary bugs. In the course of from 2 to 5 days the delirium gradually subsides, the hallucinations and responses to them are not so clearly defined, the speech becomes muttering and incoherent, the acuteness of the fire being smoldered by a blanket of increasing somnolence. The patient frequently becomes lucid at intervals, answers questions promptly, and correctly, but these intervals last only a very short time. During all these days the temperature is high, and the pulse rapid, the breathing is rapid and superficial, there is no, or very little, retraction of the head, though opisthotonos does at times occur, herpes does not develop, and there is no eruption on the body. Sordes of lips and teeth are marked. As a rule there is no change in the pupillary reaction, although in some cases there is an inequality, light reaction usually present, at times absent. Choked disc is always absent in the cortical form, external muscles of the eyes are not involved. Reflexes vary, sometimes normal, sometimes abnormal; some cases are ushered in by general or unilateral convulsions especially in children. In the very violent cases sopor and coma set in and mark most of the localizing symptoms. In the milder cases improvement usually sets in before the somnolence becomes very marked. In the state of coma there is an involuntary discharge of feces, retention and incontinence of urine, and at times bedsores. Death occurs from exhaustion. In those cases which develop during the course of one of the febrile diseases, there is a sudden exacerbation of fever, the pulse becomes rapid, the patient complains of headache and dizziness,

and then almost at once, at least in a few hours, the delirium sets in and the above symptoms may all be developed; or the disease runs a milder course, with delirium, restlessness, insomnia, together with the hallucinations and muttering.

During the course of the delirium, in some cases before it reaches its height, in others after the somnolence has set in, the second group of symptoms is developed. Whether or not these continuous cases of delirium and coma, as illustrated by case No. V. may be looked upon as a manifestation of frontal encephalitis, remains to be seen by future pathological observation. The onset is very sudden, but paralysis is rarely complete, or if it is complete it very rapidly improves during the course of the first few days.

Aphasia, both motor and amnesic, and paraphasia, are seen very frequently as focal symptoms of encephalitis.

In favorable cases the general symptoms clear up, the sensorium becomes free after 2 to 3 weeks, intelligence gradually returns. The focal symptoms, however, remain for some time longer. They may completely disappear in the course of weeks or months, or there may be a permanent defect; and this leads us to the third stage, which is not present in those cases in which the recovery from the inflammation has been complete. The paresis which remains is more or less spastic in character. Contractures, with a retardation in general development, is seen frequently in the cerebral palsies of children.

In adults the paresis may manifest itself as a slight weakness and awkwardness of the arm or leg or entire side.

My experience with the aphasia in both cases, was that the speech showed some defect even a long time afterward.

The most serious of all the sequelæ, however, is the development of epilepsy, as illustrated by Case IV, either Jacksonian, which is usual, or general, which is the exception.

Course, Duration and Termination—The course of acute non-purulent encephalitis of the cortex is that of the ordinary acute infectious disease. Fever is at times absent, but usually a high fever, and all the characteristics of the onset of an acute infectious disease, mark the beginning. The main symptoms of the entire disease show the involvement of the sensorium,

viz., the acute delirium, restlessness, insomnia, hallucinations, followed by progressive somnolence and sopor, and finally coma, show at once the seat of the disease to be in the cortex. The height of the disease is usually reached in 3 to 4 days; then the mental excitement gradually subsides.

Even during the delirium, most frequently during the somnolence, the focal signs make their appearance. After 10 to 12 days the case may end fatally; or improvement takes place, and in a week the sensorium is clear and the focal signs are already waning. Cases are on record in which death has taken place within 24 hours, in other cases in 3 to 4 days; the ordinary duration of the primary acute cortical encephalitis is from 2 to 4 weeks. Those which complicate acute febrile diseases are somewhat shorter, but only apparently because the convalescence of the two diseases is merged together. When death occurs in encephalitis it is due either to the shock of the onset or to ptomaine poisoning in the very acute stages, or is often due to the spread of the disease to vital centers, death occurring most frequently as a result of the involvement directly by inflammatory process of the respiratory or cardiac centers, or of the associating fibers connecting the latter center with the cortex.

In cases which run a favorable course the coma scarcely ever supervenes, even the sopor does not become profound, the case continues for some days, even a week, in a state of mild delirium, with moderate fever and a rapid pulse; when the fever and delirium subside the sensorium becomes clear; the patient shows mental confusion, does not remember clearly the events of the foregoing days; nothing remains aside from this but great exhaustion and the focal signs, which gradually diminish.

Prognosis—In the early stage of our knowledge of encephalitis it was looked upon as almost invariably fatal, but with a broader knowledge of diagnosis, it has been found that the disease very often runs a favorable course, especially where it occurs as a sequela or complication of typhoid or the acute infectious diseases. Pathologically we can have one of three sequelæ, either complete restitution, or the formation of a scar, or cyst. The first is interesting, and has been proven as a possibility by Oppenheim's case. Second and third occur as either the

causes of the permanence of the focal signs or what is equally, if not more important, the causes of subsequent Jacksonian or general epilepsy, and the above data culled from the pathology of the affection is borne out by the clinical data at our disposal. In recovered cases the mental condition is usually good. There may be some of the forms of aphasia, which may lead us to suspect an apparent mental defect. The focal signs usually improve very much. In some cases there is left a slight trace of paresis, and in the two aphasia cases, both of which were amnesic, there was some defect left in speech years afterwards. On the other hand von Jaksch looks upon the prognosis as bad, and doubts the correctness of the diagnosis of the cases which have ended in recovery. In my opinion the prognosis is worse in influenza cases, the result being, as a rule, fatal. My experience is that of Oppenheim, who holds that the prognosis of non-purulent cortical encephalitis is not altogether unfavorable, but at times the disease terminates favorably. Bad prognostic signs are: influenza, rapid onset and short duration of delirium state, with rapid onset of the coma; Cheyne-Stokes respiration, and high temperature. If the delirium is light, the sensorial depression not deep, and the mental symptoms begin to clear up in a few days, the prognosis is good. A very rapid pulse is a bad sign.

The best prognostic indications, therefore, are to be gleaned from the conditions of the sensorium. General conditions must be taken into consideration. During the course of an exhausting disease this general exhaustion may be a bad prognostic sign. But, like epidemic cerebro-spinal meningitis, strong, healthy young individuals may be fatally attacked.

Since von Jaksch is inclined to doubt the accuracy of the diagnosis in the cases with recovery, it behooves us to be very careful in the diagnosis. Oppenheim says that in the vast majority of cases we can only make a problematical diagnosis. We see the importance, therefore, of more exhaustive publication of both clinical and pathological cases.

The diagnosis of the cortical form of encephalitis is much more difficult than that of Wernicke's disease. The differential diagnosis of acute non-purulent cortical encephalitis must

be made from abscess, meningitis, uremic focal lesions, cerebro-spinal meningitis and acute mania, hemorrhage and thrombosis. I speak here of the adult form. In children it must be separated from acute gastro-intestinal disturbance. When the trouble occurs as a primary affection or as a sequela, the diagnostic difficulties are most marked. The most important thing is to rule out cerebro-spinal meningitis. The latter disease is usually characterized by the extreme violence of the headache, and the tendency to spastic rigidity of the extremities; the opisthotonos is very marked, there is a spastic condition of arms and legs, and Kernig's sign is never absent. There is present the delirium and high fever, but the maniacal signs are more marked in encephalitis, the headache is not so severe, opisthotonos usually absent, and retraction of the head, if present, is only indicated slightly; symptoms and signs on part of the cranial nerves in lepto-meningitis involving especially the third nerve, facial and lingual, crossed in character, affecting both sides, whereas these are either absent or only present in one group of muscles, and unilateral. I should lay a great deal of stress on the absence of violent headache and the absence of irritability of eyes and ears, especially during state of delirium, and the absence of uniformly exaggerated reflexes in the encephalitis, specially during the delirium or sopor stage. Cerebro-spinal meningitis may occur sporadically, but as a rule in epidemics, whereas primary encephalitis occurs most frequently during the prevalence of grippe epidemics. It may occur as a sequela of some one of the acute diseases, and then we would rather suspect encephalitis than cerebro-spinal meningitis; monoplegia and aphasia are apt to occur during an attack of cerebro-spinal meningitis, but never stand out so prominently, nor do they occur so early, whereas in encephalitis they occur early and assume the most prominent phase. There is no herpes in encephalitis; we would differentiate from uremic focal lesions first and foremost by a careful urinalysis, but since albumin is sometimes absent in uremic cases, other points would have to be considered. Encephalitis, in the adult at least, where uremia might enter most into consideration, is rarely ushered in by a convulsion, whereas convulsions are the most prominent feature

and occur in rapid succession in uremia. Uremia, in the early stage at least, occurs without fever; encephalitis corticalis rarely without it. Uremic focal lesions occur sometimes before, but usually during the coma period, and usually disappear with the coma, or in a few hours or days after; whereas in encephalitis the focal lesions do not usually make themselves manifest for 2 to 3 days, and persist for a long time—weeks or even months.

It is most difficult to differentiate between encephalitis and acute mania. This cannot be done sometimes for several days. The presence of a continuous fever speaks for encephalitis; moreover encephalitis makes more of an impression of a severe somatic disease, which makes the patient bedfast and exhausts him; whereas the mania case, at least in the beginning, impresses us as more of a mental and less of a physical disease. The onset of the focal signs place the diagnosis of encephalitis beyond question.

Abscess might cause some trouble, especially in those cases where the encephalitis occurs as a complication of one of the acute infectious diseases. An abscess is very rarely sudden in origin, whereas encephalitis usually is; in encephalitis general symptoms, especially those on part of the sensorium or more marked in abscess usually absent, except in the advanced or final stage. The difficulty can only be present in the early stage of either disease, and not in the later stages, and I would place most stress on the condition of the sensorium. Furthermore, in abscess we almost invariably find some local or distinct focus for pus, or at least a history of some injury, usually recent in date.

Hemorrhage and softening are somewhat difficult to rule out, not in the primary affection, for both hemorrhage and cerebral softening usually occur as sudden attacks without prodromata and fever, especially with the typical alterations of the sensorium. Moreover, encephalitis usually occurs in individuals with normal vessels and arteries.

When encephalitis occurs during or as a sequela of one of the acute infectious diseases, it is always accompanied by an exacerbation of the fever; delirium and hemorrhage or softening which might occur during the same diseases usually are not

accompanied by fever or delirium. Oppenheim says that the coma of encephalitis is never deep as that of hemorrhage, and that the pupillary reflex is usually present. Cerebral syphilis is ruled out by the occurrence of a febrile disease.

In the treatment of the cases above, I have used salicylate of sodium in the first few days or weeks; later iodide of potassium and bichloride of mercury.

*Magdeburger Naturforscher Versammlung, 1884.

*Virchow's Arch., Bd. 38.

*Deutsch. med. Woch., 1885, p. 539.

*Deutsche med. Woch., 1892, No. 3.

*Deutsche med. Woch., 1892, No. 9.

*Deutsche med. Woch., 1892, No. 31.

PARAMYOCLONUS MULTIPLEX: REPORT OF A NEW CASE,
WITH FURTHER HISTORY OF A CASE REPORTED
IN 1896, WHICH HAS SINCE RECOVERED.¹

By F. W. LANGDON, M.D.,
CINCINNATI, O.

The patient, a bright little girl of thirteen, was admitted to my service at the Presbyterian Hospital, February 9, 1902.

Complaint—Muscular spasms, occurring in paroxysms, which began six days previous to admission, and were preceded by pain in the back. This pain followed shortly after a shock from being frightened in play by her brother who was fond of teasing her.

Family History—The father was said to be a dissipated man, who had been separated from his family for some years. The mother, who accompanied the child, was in good health, and not subject to any nervous disorder. She gave a history of seven pregnancies, of which two terminated prematurely, one before and one after the birth of our patient. Three died within a few months of birth.

The brother, the only living child, except the patient, is eighteen, well physically and bright mentally.

Personal History—The patient at birth, appeared strong and healthy and weighed ten pounds, according to the mother's statement. The mother was unable to nurse her at the breast. She had "spinal meningitis" at six months of age, measles at four years, and peritonitis at ten. Had an illness at eleven which was diagnosed St. Vitus' dance, and, which, from the mother's account, somewhat resembled the present attack, but was milder and lasted a few weeks.

Present State—Patient is underdeveloped physically; has defective teeth, suggesting the Hutchinsonian type, but not conforming to it.

Skin clear, no corneal scars.

Temperature, 98.4; pulse, 108, low tension, small volume.

Heart and lungs clear.

Appetite and digestion good, bowels constipated.

Urine passed in bed or with stool, so that it was some days before a specimen was procured for examination. This re-

¹Read at the annual meeting of the American Neurological Association, June 5, 6 and 7, 1902.

vealed no albumin or other abnormal constituent and was normal in appearance.

The total amount passed, was probably less than normal.

Menstruation has never appeared.

Nervous System—The mental state appears to indicate excessive fatigue. The patient answers questions logically, but very slowly and with great apparent effort. She complains of no pain or discomfort of subjective character, but says "don't hurt me," "don't press so hard," when gently moved about during the examination. This hyperesthesia to ordinary touch seems universal and not confined to localities or zones.

In disposition she is good-tempered and with an unusual degree of patience for a child, not complaining except when touched, and then flinching rather than resisting.

Cranial Nerves—The violence of the muscular spasms, which are brought on by questioning and handling, prevent any detailed tests.

There is no contraction of visual fields to rough tests; no defect of hearing, excepting possibly a hyperesthesia.

Smell and taste are apparently normal.

Trunk and Extremities—Patient lies on her left side, but assumes the dorsal decubitus readily upon request. There seems to be no loss of any voluntary movement but excessive fatigue appears to accompany the slightest exertion.

The grasp is so feeble that it cannot be registered on an ordinary dynamometer.

The muscles of the trunk generally, both dorsal and ventral, and those connecting the trunk and extremities, are the seat of frequently repeated violent clonic contractions. These clonic spasms closely resemble the effect of closure of a galvanic circuit in the muscles.

While these clonic spasms are bilateral, and generally, though not always, synchronous on the two sides, they are not strictly symmetrical in power, being usually much more vigorous on the left side as regards the muscles moving the limbs. At times the difference in activity between the two sides was scarcely noticeable.

The contractions in the erectores spinae are apparently about equal on the two sides.

A transient opisthotonus is produced by them at times, and on three separate occasions during her first day in the hospital they were so violent as to throw her out of bed on to the floor, which accident was attended with some contusions.

The spasms, which are practically continuous during waking hours, are rendered more violent and more frequent by touching the skin, testing the tendon reflexes, or entrance of another

person into the room; and by attempts of the patient to answer questions.

As regards distribution of the spasms, it is shown fairly well on the accompanying illustration which is reproduced from that made for the first case reported by the writer².

Distribution of myoclonic spasm indicated by plus marks.

The chief difference is in the marked involvement of the *erectores spinæ* in the present case, and their escape in the former one.

The biceps and triceps in the present case are the seat of occasional spasms, while the muscles of the face and neck, the forearms and hands, and the legs and feet seem to escape entirely. The wrists, fingers, ankles and toes remain flaccid, even during the violent paroxysms; their only movements appearing

²Cincinnati Lancet-Clinic, February 8, 1896.

to be transmitted from the shoulder and upper arm contractions.

The tongue can be protruded and remain so during the paroxysms; conversation can be carried on, facial movements made at will, without apparent effect, other than the production of fatigue, and some increase in the violence of the contractions of the truncal muscles.

The diaphragm appears affected at times, as evidenced by a short sharp exclamatory cry when any one enters the room unexpectedly, or any noise such as closing a door occurs in an adjoining room.

This is evidently not due to fright, but appears, judging from the absence of accompanying mental disturbance, to be simply a heightened reflex act.

The intercostal muscles do not appear to be the seat of any abnormal movements, and respiration is regular and free.

Contraction of the thigh-muscle groups is about equal in the flexors and extensors, so that the effect is to produce simply a transient rigidity at hips and knees. No movements of rotation, adduction, or abduction of the thighs are observed.

Sensory Symptoms—The patient seldom complains spontaneously, but when questioned says she has pain in the head and back.

Once when the contractions were unusually violent, she asked to be given something to "stop me."

The contractions cease during sleep, but return at any hour of the day or night, if the patient awakes.

Objectively there is no area of anesthesia anywhere, but a condition of hyperesthesia to touch seems generally present. This is especially marked about the head and face.

Reflexes—The visceral reflexes are not impaired. The tendon jerks are highly exaggerated, but do not give the impression of organic disease. Ankle-clonus is absent.

The cutaneous reflexes are likewise much heightened.

The Babinski sign is absent. Testing either the tendon or cutaneous reflexes, brings on the spasms when absent, and increases their activity when present.

The following notes made by the writer at various intervals, show the range of variation in the muscular movements and mental state during her two months' stay in the hospital.

Feb. 8 to 15, contractions chiefly, sometimes entirely, limited to left side. Frequency usually about 55 or 60 per minute, but varying at times between 27 and 98. Occasional intervals of freedom from contractions for from 5 to 10 minutes by the watch.

During this period, hyoscine hydrobromate in 1-200 grain

doses was given every three hours, excepting during sleep. Also potassium iodide in 5 to 10 grain doses.

Previous to her admission to the hospital, chloral and potassium bromide had been given in full doses, with the effect, according to the mother, who had been a professional nurse, of increasing the violence of the spasms.

Feb. 21 to 26. During this period potassium iodide was continued, but Fowler's solution of arsenic in increasing doses up to 12 drops was substituted for the hyoscine.

On Feb. 22, the spasmodic contractions numbered 84 to the minute by two separate counts; were shock-like as usual, bilateral, but rather stronger in the left side; practically continuous except during sleep.

Feb. 26. Spasms irregular in character; first a group of 7 to 10 contractions, rhythmical and at the rate of about 60 to the minute; then a change to a group of 7 to 10, much quicker and more violent. Chiefly the glutei and erector spinæ groups are involved.

Mental condition good.

Feb. 27 to March 1. During this period sulphonal in 10 grain doses was given every three hours excepting during sleep.

She received about five doses daily.

Note March 1, 5 P.M. (by writer). Individual shocks less frequent (32 to the minute). At intervals of one to three minutes the shocks occur in groups of 7 or 8, very quickly repeated; then a pause, and a return to the slower rate of 30 or 32 to the minute. Then seven very rapid and violent shocks (sometimes 14 or 15). Then a return to the 32-rate per minute.

The nurse reports that this mode of grouping has been observed for three days.

Patient is delirious, and talkative for the first time since her arrival, and complains of dizziness in head.

Pulse ranging from 72 to 94.

Sulphonal omitted March 1, and no antispasmodic remedies given for three days.

March 3. Pulse 60, low tension, small volume. Spasms in groups of 8 to 15 shocks (rate about 60 to the minute). Between these groups of shocks are intervals of freedom, varying from a half hour to an hour.

Has been singing and elated much of the time; constructs doggerel. Seems good-humored and logical when questioned.

Fluid extract cactus grandiflora in three-drop doses was ordered to improve the circulatory depression.

March 5. Spasms as last noted, but with shorter intervals

of rest ($\frac{1}{2}$ minute). Rate 30 to minute with groups of 8 to 15 quicker shocks occasionally.

Mentally somewhat stupid or slow of comprehension.

Asks to be given something to "stop me."

Hyoscine given one dose 1-100 grain and patient slept quietly all night without awakening and without spasms.

Other remedies tried in turn were thyroid desiccated in 3-grain doses; sodium bromide 20-grain doses; conium, Squibb's fluid extract, 3-drop doses; potassium bromide, 10-grain doses; solution bimeconate of morphia, 10 to 15-drop doses.

Each of these drugs was given separately for some days in connection with some tonic medication, but no appreciable improvement could be traced to their use, with the exception of the morphia salt, which lessened the frequency and violence of the individual spasms as well as secured short intervals of entire freedom from them during the waking hours.

The effect on the mental state, however, was bad, as was the effect on appetite, the patient developing an aversion to food of any kind, while before this, all food offered was acceptable and enjoyed.

The spasms continued less violent, 25 to 30 per minute for some days after cessation of the morphine salt, and the mother insisted on removing her from the hospital to her home, where she was placed, by my advice, in the care of Dr. E. M. Keefe, to whose courtesy I am indebted for the following notes:

For the most part the treatment pursued was a tonic one, comprising iron, arsenic, manganese and strychnia in small doses. Occasional doses of hyoscine or bromides were given when the violence of the paroxysms seemed to demand relief but with little apparent effect.

The patient was better and worse by turns very much as when in the hospital. On the whole, however, a gradual improvement took place after removal to her home, so that by May 16 she was free from the muscular shocks for a whole day.

This period corresponded to the one hundred and second day after the onset of the disease.

On the following day, however, the excitement produced by a neighbor in the same house chastising a child, brought back the spasms in full force for 24 hours, after which they have gradually lessened up to date (May 24), when there have been none for 48 hours.

Her general condition is better, as regards color and flesh; she is mentally cheerful and happy, but still so weak as to be unable to sit up.

Further reports of progress and termination are to be expected.

Notes on the Further Progress of a Case of Paramyoclonus Reported in 1896. (Referred to as case one in text.)

Summary.—P. H., male, aged 48, of Irish birth. Onset shortly after a period of business worry, and a mild attack of la grippe.

Distribution of shock-like contractions as shown in accompanying illustration. Frequency of contractions about 70 per minute usually, but varying at times between 50 and 250. Duration of paroxysms from $\frac{1}{2}$ minute to ten minutes.

Number of paroxysms or attacks in a day, varying between 20 at first and two at the latter part of the disease.

Intervals of rest between paroxysms from a few minutes to several hours.

Paroxysms brought on at any time by questioning patient, exposure of surface of body to the air, and by ordinary voluntary movements of the patient.

Remedies used: quinine and arsenic in moderate doses, which appeared at first to lessen the number of paroxysms markedly, but later had no observable effect.

Solution bimeconate of morphia, given in ten-drop doses, at four hour intervals, for a day was followed by almost continuous spasms for 24 hours.

Total time in hospital about two months during which period he went home for eleven days, returning much worse than before.

Hitherto Unpublished Notes of Further Progress of Case I. P. H., January, 1896.

During the eleven days' sojourn at home above noted, the paroxysms of clonic spasms became much more frequent than when in the hospital, and the individual contractions were said to be much more severe. Friends who came with him to the hospital at the time of re-admittance, stated that on one day he was "almost maniacal" in his actions.

A brother-in-law states that he was always a "very impatient" man; hard to control, and likely to over-exert himself at work. During the six weeks following his re-admission, the paroxysms varied in frequency from 8 to 15 for the most part, once going as low as four, and one day (March 20), the spasms were almost continuous night and day, so that separation into definite paroxysms was impossible.

On one day he complained of a "burning sensation in stomach," and on another day, of a "cracking sensation" in the head, but these subjective conditions were not accompanied by any exacerbation in the frequency of paroxysms or the violence of the contractions.

Patient vomited about $\frac{1}{2}$ hour after meals for some days,

and also vomited his medicine, which at this time was sodium phosphate. On one occasion he had a moderately severe pain in the abdomen, for which solution of morphia bimeconate was given in small doses. This, while apparently benefiting the abdominal pain, was followed by a pain in the "back of the head," and by considerable increase in the frequency and severity of the spasms. He left the hospital little if any improved as regards the spasmodic contractions and disappeared from view for nearly two years.

On Jan. 25, 1898, he called at my office apparently in perfect health, having gained 25 lbs. in weight, and been free from spasms of any kind for eleven months.

He stated that after leaving the hospital, March 1896, he continued treatment at various places for about a year, but with no benefit to the spasmodic contractions.

He ascribes his recovery to his return to hard laboring work (ditch digging), which he resumed a year ago (1897), after discarding all medical treatment.

Since this note, I have seen him in May 1900, and again in January 1902, and he has had no relapse nor ill health of any kind during these intervals.

NEW YORK NEUROLOGICAL SOCIETY.

April 8, 1902.

The President, Dr. Joseph Collins, in the chair.

A Case of Asthenic Bulbar Paralysis.—Dr. George W. Jacoby presented a young woman with asthenic bulbar paralysis. He said that this was only the second case that he had seen. The other case was that of a young man who now had an intermission in the disease that had lasted for three years. From the histories of other reported cases it was not probable that the man had permanently recovered. The patient presented was a girl of twenty years, who had been perfectly well until last May, when, while reading aloud, her voice was noticed to falter. Within a few weeks this became quite noticeable even on speaking. About this time there was some double vision. Later on there were nasal speech and regurgitation of fluids through the nose. Only within the last two months had she developed a slight weakness of the right hand. Dr. Jacoby called attention to the broadness of the mouth, the thickness of the lips, the almost expressionless appearance of the face, and the difficulty of pouting the lips as in the act of whistling. There is inability to completely close the eyes, and the reflexes are exhaustible.

An Experimental Study of the Reflexes in Total Transverse Lesions of the Spinal Cord.—Dr. William Aldren Turner, of London, presented a paper on this subject (see page 321).

Dr. Philip C. Knapp, of Boston, said that comparatively few of the writers upon the reflexes had dwelt upon one point, *i.e.*, the extreme difficulty of proving anatomically the fact that the cord is totally destroyed. In one of his own cases there was clinical proof of conduction through the cord, and sections were made with very great care in order to determine the condition of the softened portion of the cord. It was found extremely difficult to make out the presence of normal nerve fibers in the softened part although undoubtedly there must have been some. This might explain some of the published cases which appeared to contradict the rule. A case had come under his observation in which on removing the fractured laminae the cord was found absolutely divided and the ends free. In this case a year after the accident there was flaccid paraplegia with loss of the knee-jerk and retained plantar reflex. This occurred before attention had been called to the Babinski reflex. Bastian's theory of the influence of the cerebellum upon the reflex seemed to be weakened by the fact that so rarely was there any change in the reflex in cases of cerebellar disease. The explanation of loss of the knee-jerk from complete section of the cord seemed to him far from satisfactory. It was known that if the entrance of the sensory fibers in the posterior horns and columns in the third and fourth lumbar segments were destroyed, and the corresponding cells and anterior roots innervating the quadriceps were destroyed, the reflex was lost, but even assuming that the nerve impulse must pass into the cord to the level of the cervical enlargement, or possibly higher, it was difficult to understand this by the experiments brought forward by Dr. Turner. If there were a reflex arc or a mechanism for the neuromuscular tonus, why should it be destroyed by a lesion high up while a lesion below, which

must cut off all communication, allows of the preservation of the reflex?

Dr. Charles K. Mills, of Philadelphia, said that he did not feel that he could contribute anything new to this interesting subject, but he would mention the fact that he had seen quite a number of cases, with autopsies, which tended to confirm the views expressed by Dr. Turner. He had had a number of autopsies on cases of incomplete section of the spinal cord in various regions, in which the conditions were those already described by Dr. Turner. He could recall several traumatic cases in which high lesions with complete loss of the knee-jerk had been present. His mind was far from being clear as yet with regard to the mechanism allowing of the retention of the knee-jerk under certain conditions and its loss under others. The cerebro-cerebellar theory had always seemed to him the most nearly satisfactory. He had had a comparatively large number of cases of cerebellar lesion, and these had shown interference with the knee-jerk, but the conditions had not been uniform. He had seen loss of the knee-jerk in cases afterwards demonstrated to be examples of cerebellar disease. He had seen increased knee-jerk and even crossed knee-jerk in connection with cerebellar disease, and he was satisfied that disease of the cerebellum plays a part in interfering with the knee-jerk as with other reflex phenomena. The fact that lesions at the cervico-dorsal junction when complete were apt to cause loss of the knee-jerk, was of great interest. The existence of a ciliospinal center in a particular region of the cord might be suggestive with regard to the effect upon the knee-jerk and the lower reflexes in these particular cases.

Dr. Joseph Fraenkel thought, with Dr. Mills, that the more this problem was studied the less seemed to be really known about it which would be of value at the bedside. The presence of a ciliospinal center high up in the cord might help us in the explanation of these phenomena. A number of heterogeneous phenomena were considered in connection with the reflexes. The plantar reflex, which seemed to be the only permanent skin reflex, was representative of the skin reflexes just as much as the knee-jerk was characteristic of tendon-reflexes. This knee-phenomenon was one of the expressions of the muscular qualities. A muscle possesses what is called irritability, and quite a complicated neural apparatus keeps up what is called muscular tonus. Whatever interfered with this influenced the tendon reflexes. In conjunction with the President of this Society he had carried on for four years a clinical study of the reflexes, measuring at the same time the tonicity of the muscles. This study embraced about 600 cases, and included certain interesting pathological findings. They had become convinced that the knee-jerk was absolutely dependent upon the muscle tonus. If the muscle tonus were increased through pain in the joint there would be an increase of the knee-jerk. When the lesion of the spinal cord had been slowly progressive there would be nutritive shortening of the muscle, but the muscle tonus not being destroyed the reflex would still persist. The tendon reflexes should really be placed in the same category with the visceral reflexes. The considerable discrepancy between the findings at the bedside and in the laboratory had been explained by a recent publication of Strümpell, in which it was stated that the mechanism of the reflexes in the lower animals and in man was different.

Dr. M. G. Schlapp referred to a reported case in which, on histological examination, the cord was found to be absolutely severed in the dorsal region. This case overthrew the Bastian theory. He thought the reflexes should be considered in their abnormal conditions. If a poison were introduced into the body it would exert a selective action on the neurones of the central nervous system. In cases of ergotism, lead poisoning, typhoid fever and brain tumor, degenerations were found in the

posterior columns and in the roots entering these columns. If these fibers were traced, they would not be found to pass into Goll's columns, and consequently they were short fibers. In many cases of brain tumor in which the tendon reflexes were missing there would be no sensory disturbance. These fibers were probably the sensory half of the reflex circuit. The loss of reflexes, he thought, could be explained by degeneration of the short neurones in the posterior roots having to do with the tendon reflexes. He had found this lesion of the cord in cases of transverse lesion of the spinal cord, and also in cases of brain tumor, and in a case of alcoholism. These were facts, and consequently demanded more careful attention than mere theories.

Dr. Joseph Collins said that his own views had been quite well expressed by Dr. Mills and Dr. Fraenkel.

Dr. Turner, in closing, said that until he had collected the results of his experiments in tabular form he had had no idea that the condition of the reflexes was so extremely variable. On referring to the literature he had found that this had been noted by several observers quite a number of years ago. He was in perfect accord with the position taken by Drs. Collins and Fraenkel. The condition of the knee-jerks was entirely due to the state of neuromuscular tonus, for it was just this which was affected by transection. The superficial anal reflex was a pure reflex, and was found usually in monkeys and commonly in man. Unfortunately, the plantar reflex could not be elicited in monkeys. The effects on the reflexes observed in cases of disease of the cerebellum and in experimental lesion of the cerebellum were very different. He thought we should ascribe these variable phenomena not so much to the existence of a tumor in the cerebellum as to interference with intracranial pressure from the presence of a morbid growth under the tentorium cerebelli.

PHILADELPHIA NEUROLOGICAL SOCIETY.

April 22, 1902.

The Vice-president, Dr. F. X. Dercum, in the chair.

A Case of Friedreich's Ataxia was exhibited by Dr. William G. Spiller.

A Note on Some Psychoses of Early Puberty, with Report of a Case in a Boy Twelve Years Old.—This paper was read by Dr. A. Gordon, who remarked that in cases where children were described as unusually bright, he looked upon them with suspicion as regards the development of psychoses. Similar observations have been made by others.

He also emphasized the great instability of the mental state in these patients. In his case subsequent to the excitement caused by a fire the symptoms immediately returned. This is analogous to what is seen in organic disease of other organs of the body.

Dr. William Pickett regarded Dr. Gordon's case as an interesting one from many points of view. Dr. Gordon had referred to a similar mental state in one or both parents. A similar heredity was pointed out in these cases by Morel. Looking at the condition from that point of view Dr. Pickett could understand why Dr. Gordon should follow Magnan and others in classifying this young man as an example of the psychic stigmata of degeneration. He had seen a good many of these cases complicating other forms of insanity or incidental in other forms of insanity. As the speaker had pointed out in his paper on dementia præcox, there is an objection to calling these manifestations psychic stigmata, as they come and go according to the physical condition, as is exemplified in the present case. He believed that these cases recover, particularly at this period of life. That fact makes it more rational to classify these cases as neurasthenics. We usually find some of the familiar symptoms of neurasthenia in these cases, and so neuropathic neurasthenia seems the most expressive term for this group.

Another question of importance in connection with these cases, is how much use can we make of these stigmata for purposes of prognosis. Does the early presence of obsessions render it more probable that a young man of unstable makeup will later become the victim of some form of adolescent insanity? Dr. Gordon predicts that his patient will become a case of dementia præcox. Kraepelin asserts that the percentage of permanent dementias following mental disturbance at this period is larger than ordinarily supposed, from the fact that the dementia is often slight and manifests itself largely in the moral sphere by a change of character.

It was for such cases, which we might call moral dementia, that Kahlbaum proposed the name heboidophrenia.

Dr. F. Savary Pearce said that the case reminded him of one which had come under his observation a few days before at the Medico-Chirurgical Hospital. The patient was an Italian boy about twelve years of age. There was a history of degeneracy in the family. There is no doubt that this boy is the subject of moral insanity. He had been in the habit of knocking other boys about, and had himself been knocked about by the father of one of the boys whom he had abused. Following this he had pseudo-epileptic attacks. The father assumed that the injury was the cause of the so-called fits and the mental degeneration, and proposed

to bring suit. The speaker had told the parent that the injury was not the cause of the trouble,—that the boy was morally defective and should be in a hospital.

He had seen another case in a young girl with a history of insanity on the mother's side, and he regarded this as a case of dementia præcox. She had had three attacks of dementia. The present attack is peculiar inasmuch as she will not speak of persons except as numbers. The girl has been overworked at school, particularly in mathematics.

Often in these degenerate subjects the delusions and hallucinations are associated with particular lines of overwork. His experience was that these patients are not usually intelligent, although the family will often say that they are, and perhaps they are precocious as compared with other children in the family. He did not believe that precocious or bright children in normal families are more liable than others in the family to become insane. He referred to a young woman of his acquaintance who as a child was very precocious. She had grown to perfect womanhood and was very bright.

Dr. Alfred Gordon stated that what he had said about his patient being unusually bright did not rest entirely on the statements of the family. Their evidence had been confirmed by the boy's teachers. His experience had been that cases of unusual brightness should be looked on with suspicion.

Dr. Charles W. Burr agreed with Dr. Gordon that preternaturally bright children should be looked on with suspicion. Any one who has had much to do with criminal children knows that they are plausible and that they can lie after a fashion that older persons cannot, and that shows their bright character.

An Unusual Case of Myasthenia.—This paper was read by Dr. David Riesman.

Dr. D. J. McCarthy said that in a case reported by Dr. Burr and himself there was distinct smallness of the medulla oblongata and the spinal cord. It was the smallest pons by one-third that he had seen. In another case not reported there was a distinct small abscess in a persistent thymus gland. In a case reported lately there was a persistent thymus gland. In a recent autopsy reported there was a persistent thymus with tumor formation and round-cell infiltration into the muscular tissue which proved to be metastatic from the thymus gland. In one case the myasthenia followed pregnancy. The toxic theory seems to be the only plausible one to account for these cases, but there is as yet no tangible evidence to support it.

Dr. A. C. Croftan favored the view that Dr. Riesman's case was one of Addison's disease without pigmentation. He had seen a similar case in Vienna in 1896. The patient had an attack of myasthenia from which he recovered. Some six months later he died from general tuberculosis. One of the adrenal glands was destroyed by the tuberculous process, and the other was greatly hypertrophied. The myasthenia may have resulted from the atrophy of the gland and was later relieved by the compensatory hypertrophy of the other gland.

The President suggested that Dr. Riesman, in his closing remarks, should indicate the points of differential diagnosis between his case and one of Landry's palsy.

Dr. Riesman said that he looked upon his case as one of grave myasthenia due to functional insufficiency of the adrenals. He was quite convinced that the man had no tuberculosis anywhere in his body.

With regard to the distinction from Landry's palsy, the case reported by him was not, he thought, one of paralysis in the true sense; the man could lift his limbs and could perform all the finer movements with

his hands, only, however, with great difficulty, on account of great weakness. If given time he could accomplish the movements he wished to make. There was no foot-drop; no loss of knee-jerk. There were no phenomena indicating involvement of the respiratory muscles, nor did the symptoms show the characteristic ascending tendency. The physicians in attendance had considered the case one of neurasthenia; and, for practical purposes, this was a good diagnosis. There were no sensory symptoms, and the patient recovered in two months.

A Case of Tumor of the Pons, Medulla Oblongata and Upper Part of the Spinal Cord with Necropsy was reported by Dr. W. G. Spiller.

Dr. Alfred Gordon referred to a case reported by Oppenheim. The patient had been under observation four years, complaining of pain in the back. It had been diagnosed as rheumatism. Oppenheim insisted that there was a tumor of the spinal cord and this diagnosis proved to be correct.

A Case of Attempted Self-Castration was reported by Dr. A. R. Moulton.

Dr. James Hendrie Lloyd said that this case was of great interest and like one which he had seen at the Philadelphia Hospital years ago when he was examiner of the insane. The man, under the delusion that he was wasting away, took out one testicle. He was taken to a hospital and recovered. In the course of a few months he removed the other testicle. After recovery from the injury he was sent to the Philadelphia Hospital as an insane patient. He was then exceedingly insane, showing that the removal of the testicles in response to an insane delusion was not curative. So much was he impressed with the idea that he was losing his virility that one day, securing a knife, he made a deep gash in his perineum. He did this because he believed that there was still some secreting tissue left, in spite of the fact that both testicles were gone. He was again treated and again recovered from the wound. These cases should be forced upon the attention of our gynecological friends. The gynecologist who takes out the ovaries of an insane woman with the idea of curing her insanity does just what this man did on himself. The one is just as mad and unphilosophical an idea as the other—just as insane.

There is another important point in this connection. There has come to be a cult of people who are recommending the "open-door treatment" of insanity. Throw open the doors, they cry, throw away your locks and keys, and let your insane people go free. They carry to an extreme the views of Tuke and Pinel, who struck off the shackles of the insane. These cases of self-mutilation illustrate how absolutely improper such a procedure would be.

Dr. F. Savary Pearce mentioned a case which had been described to him by a physician of a man perfectly sane who could not afford the fee for removal of the testicle for disease, and who had operated on himself successfully.

Drs. C. K. Mills and W. McConnell exhibited a patient showing a new group of brachial and pectoral reflexes. Tapping over the inner aspect of the shoulder and also at the points where the second and third ribs join the sternum caused certain reflex movements in the arm, forearm and fingers. They had found the same reflex phenomena in normal individuals, and the same exaggerated or impaired in a number of patients suffering from organic nervous disease. The increase, diminution or loss of these reflexes occurred under the same conditions of disease as caused similar changes in the von Bechterew scapulo-humeral reflex.

Thrombosis of the Midcerebral Artery, Causing Aphasia and Hemiplegia, with Remarks on Central Skiagraphy.—This paper was read by

Dr. C. W. Burr and Dr. G. E. Pfahler. In connection with the paper Dr. Pfahler exhibited skiagraphs from the brain. He had up to this time made fifty-one skiagraphs of brains and believed that these examinations would be of service in the diagnosis of diseases of the brain.

Thrombosis of the Posterior Limb of the Midcerebral Artery.—This specimen was exhibited for Dr. C. K. Mills.

A Case of Ataxia with Recurrent Clonic Spasm in the Anterior Tibial Muscles was reported by Dr. J. H. W. Rhein.

A Specimen from a Case of Hydrocephalus was exhibited by Dr. F. Savary Pearce. The patient, a colored child aged two and a half years, had been ill about nine months. There was no tuberculous history in the family. There was no evidence of tuberculosis in the brain. The lateral ventricles contained about a pint and a half of clear serum. Every bone in the cranium was disarticulated. The child died of inanition, following a series of slight convulsive seizures, tetanic in nature.

Periscope.

Deutsche Zeitschrift für Nervenheilkunde.

(1902. Band 21, Heft 3-4.)

7. A Case of Asthenic Bulbar Paralysis with the Results of Autopsy. LIEFMANN.
8. The Psychological Disturbances of Tumors and Injuries of the Frontal Lobes. B. MÜLLER.
9. The Centrifugal Impulse in the Sensory Terminal Neurones. KOHN-STAMM.
10. Operative Interference in Choreic Epilepsy. VON BECHTEREW.
11. The Results of Almost Complete Strumectomy. LUNDBORG.
12. Bulbar Paralysis and Sarcomatosis. HENSEN.
13. Tuberculous Meningomyelitis. HENSEN.
14. The Localization of Reflex Pupillary Immobility. WOLFF.
15. Partial Myotony with Muscular Wasting. SCHOTT.
16. A Contribution to the Question of Infantile Tabes. IDELSOHN.
17. Remarks upon the Clinical Observation of the Skin and Tendon Reflexes of the Lower Portion of the Body. SCHOENBORN.
18. The Changes in the Spinal Cord as a Result of Intra-cerebral Pressure. FINKELBURG.
19. Brief Communications. (1) Contribution to the Knowledge of the Reflexes. BICKEL. (2) The Peculiar Associated Movements of the Paretic Palpebral Elevators and Sphincters. HIGIER.
20. Book Reviews.

7. *Asthenic Bulbar Paralysis.*—Liefmann reports the case of a girl nineteen years of age, without neuropathic heredity, who, five years after an attack of diphtheria, during which she was severely ill, developed paresis of some of the muscles of the face, particularly the left eye-lid. A year later there was bilateral paralysis of the muscles of the face, and finally paralytic manifestations in all the motor cranial nerves, giving rise to external ophthalmoplegia, facial diplegia, and disturbances of speech, swallowing and mastication. At the same time the patient had fatigue of all the muscles of the body, atrophy of the right half of the tongue, and some quantitative alteration in the electrical reaction of the muscles supplied by the facial nerve, that is to say, the patient presented the characteristic picture of asthenic bulbar paralysis. She died rather suddenly, and macroscopic changes were not found in the central nervous system. The histological examination showed practically no changes in the cells of the central nervous system, with the exception of some peculiar homogeneous masses, resembling colloid, which were found in the perivascular spaces of the capillaries, and scattered through the nervous system. The muscle of the tongue showed a considerable infiltration with fat. Liefmann discusses the nature of asthenic bulbar paralysis and quotes a number of cases from the literature. He believes that the disease may be associated with atrophy of the muscles, and that this atrophy may be due to a peculiar noxious substance that interferes with the function of the central nervous system. This noxious substance is probably toxic in character.

8. *Psychical Troubles and Frontal Lobe Tumors.*—Müller discusses particularly the case reported by Welt, which is supposed to indicate that disturbances of intelligence are apt to follow lesions in the frontal lobe. He believes that in all such cases a diffuse disease of the cortex of the brain should be absolutely excluded, and that the patient should be proven to be not of a neurotic character before the injury or tumor developed. In a case reported by Welt there is every reason to believe the patient was hereditarily defective, and in many other cases in which the proof is entirely inadequate that the frontal lobes are particularly involved this explanation may be the true one. In regard to the frequency with which a tendency to make puns occurs in cases of disease of the frontal lobes, Müller, after admitting it, attempts to explain it by various hypotheses. (1) That the tumor may produce a general dementia; (2) that it may be the result of epilepsy; (3) that certain chemical substances may be generated by the tumor, or administered as remedies; (4) it may stimulate and appear excessive on account of the contrast with the general apathy and indifference of the patient. He concludes, therefore, that the symptom is only a general symptom of tumors of the brain, is caused by the progressive dementia produced by the tumors, and is more common in tumors of the frontal lobes because their course is relatively less acute. The difficulty in the discussion of this subject lies in the fact that a very large amount of material has been used for statistical purposes, and that much of this material is not sufficiently conclusive. The majority of brain tumors in this region are gliomas, or gliosarcomas, that is to say, they are probably congenital in nature. These tumors may be associated with psychical symptoms in three ways: either by interfering with the general nutrition of the brain, or the psychical condition and the tumors may arise from the same cause, or the psychoses may preëxist, and, by predisposing to injury, act as a remote cause of tumor formation. In conclusion Müller urges that in future all cases of brain tumor be carefully studied by the psychiatrist in order that our information regarding the relation of these tumors to mental defects may be more accurate than it is at present.

9. *Centrifugal Impulse in Sensory Neurones.*—Kohnstamm believes that the centrifugal neurones may be irritated by the central nervous system. The arguments in favor of this may be summarized as follows. (1) The phenomena of the reflexes which may extend from one posterior root to another; (2) trophic disturbances which occur in organic disease and in experiments upon animals; (3) the pathology of herpes zoster; (4) the fact that groups of nerve fibers exist in the midst of sensory neurones, carrying impulses toward the periphery; (5) the changes in the spinal ganglion cells after section of their peripheral fibers, and (6) the fact that the ganglion cells apparently may conduct impulses in two directions. Each of these points is discussed in a separate paragraph, and Kohnstamm finally concludes that the hypothesis is sufficiently clear.

10. *Choreic Epilepsy.*—Von Bechterew reports the result of an operation upon a case of choreic epilepsy, a condition that he has previously described. The patient showed cramp-like twitchings in various parts of the body, occurring before the epileptic attacks, the latter frequently giving rise to serious injury. At the operation the skull and dura were permanently removed from the Rolandic region on one side. The irritability of the cortex was carefully tested, and then small portions of the gray substance of the central convolution removed at three places. There were no signs of paresis after the operation, and the patient was so remarkably improved that he was ready to submit himself to an oper-

ation upon the opposite side. A similar operation was therefore performed, but unfortunately, as a result of erysipelatous infection of the wound, the patient died.

11. *Strumectomy*.—Lundborg, in discussing the results of strumectomies, involving four-fifths or more of the thyroid gland, states that there may be 6 terminations: (1) Acute tetany, followed by death; (2) acute tetany, followed by recovery; (3) chronic tetany; (4) chronic tetany and myxedema; (5) myxedema; and (6) entire recovery. He reports the case of a woman twenty-four years of age, with neuropathic heredity, who, in childhood, had developed goiter of both sides of the neck. She also had (even as early as the age of eleven years) tremor and tachycardia. At the age of 15 a portion of the left lobe was removed, and at the age of 17 the right lobe was also removed. Almost immediately after the second operation the patient developed acute tetany, which gradually passed into a tetanoid condition and then improved. A certain amount of renewal of the tremor occurred. The attacks of tetany, however, continued to occur especially at the menstrual periods; they were preceded by an uncomfortable feeling in the arm and then by clonic spasm. These clonic movements involved all the extremities and sometimes even the whole body. The patient was given thyroid tablets and gradually improved, although she did not entirely recover.

12. *Bulbar Paralysis and Sarcomatosis*.—Hensen reports the case of a girl, nineteen years of age, who had an attack of some acute condition, accompanied by fever and vomiting. Three weeks later, she felt as if the lips were thickened, and a week after this there was paralysis of the left side of the face associated with paralysis of the abducens nerve, atrophy of the tongue, a nasal and hoarse voice, difficulty in swallowing, and slight paresis of the right side of the face. The liver and spleen were enlarged, but otherwise no pathological condition was discovered, with the exception of the total cessation of menstruation. The patient slightly improved, but developed necrosis of the right tonsil, associated with slight fever. She then became anemic, rapidly grew weaker, and died. At the autopsy there was found sarcomata of both ovaries with metastasis to the spinal column, the liver, kidneys, uterus and vagina. The central nervous system was peculiarly firm in consistency; there were some grayish white lines in the white substance of the brain; slight hydrocephalus and a doubtful tumor-like formation upon the outer side of the dura. The microscopical examination showed peculiar changes in the central nervous system, particularly in the medulla, which led to the suspicion that they might be beginning metastases. Small focal lesions and extensive secondary degeneration of the nerve fibers could be traced. As, however, these focal lesions appeared to be more recent than the symptoms, it is possible that some other cause was acting at the same time.

13. *Tuberculous Meningomyelitis*.—Hensen reports the case of a woman forty years of age, who had chill, headache, severe pains in the back, difficulty in urination, and, when brought to the hospital, she showed slight paresis of the right abducens, paralysis of the bladder, hyperesthesia of the legs, and slight increase in the patellar reflexes. The patient improved slightly, and then developed numbness in the lower limbs, with paralysis in both. She had also girdle pain and gradual ascent of the anesthesia along the body. Reactions of degeneration occurred in some of the muscles. The patient finally died, and at the autopsy tuberculous basilar meningitis was found. A tuberculous myelitis was found about the middle of the dorsal region, which produced almost complete destruction of the cord. The case is rare, and

apparently commenced as a meningitis of the spinal cord, followed by the myelitic changes.

[A note by the editor states that the author of these two articles died of tumor of the brain before they appeared.]

14. *Localization of Reflex Pupillary Immobility.*—Wolff reports the case of a man forty-five years of age who, a few months before admission, had had pain in the back between the shoulder blades; this gradually extended to the neck and head. The patient developed diplopia and twitching in both left extremities. Memory was much impaired; he gradually developed paresis of the left leg, and then recovered almost entirely after employing potassium iodide. He then became worse, was completely irresponsible; the pupils were of the Argyll-Robertson type, and there was paresis of the whole left side of the body. The patient gradually grew weaker, developed cough with expectoration, and finally died. At the autopsy a large tumor was found in the right cerebral hemisphere, extending almost to the wall of the third ventricle, and involving the corpus striatum and the anterior portion of the optic thalamus. The central portion of the brain was sectioned by the Weigert method, and two other gummas were found by this method, one of the ventral surface of the brain at the junction of the pons and medulla, and the other in the upper portion of the cervical cord, extending from the second to the fourth segments. Wolff discusses the difficulties in locating the lesion that gives rise to the Argyll-Robertson pupils. Theoretical explanations are unsatisfactory. In his cases Westphal's nucleus was not involved, and there seems, perhaps, more reason to suppose that the cervical lesion had more to do with it than any of the others. He admits that at present we know nothing at all about it.

15. *Partial Myotony.*—Schott discusses the case of a boy eighteen years of age, who had myotonia, commencing in the legs and then extending to the hands. The symptoms were more pronounced in cold than in warm weather; otherwise the patient was normal. Electrical reactions showed no particular abnormality, excepting in some of the muscles of the fingers, in which there was slight prolongation of the contraction, a marked reduction of faradic irritability, and an inversion of the galvanic formula. The disease does not appear to have occurred in any other member of the family.

16. *Infantile Tabes.*—Idelsohn reports a case of a girl six years of age, whose father and mother suffered from syphilis, who had Argyll-Robertson pupils; the tendon reflexes were lost; station and gait were normal; there was hypalgesia in the legs, and the child slept more than usually. There seems little reason to suppose that the case is anything but tabes dorsalis. Altogether Idelsohn has been able to collect six other cases occurring in young children. In all there was leucic infection of the parents and the characteristic symptoms.

17. *Skin and Tendon Reflexes.*—Schoenborn, after a discussion of the individual reflexes and the methods in which they are elicited, in the course of which he touches upon several interesting topics, as for example, whether the knee-jerks are ever present in tabes, mentioning an interesting case in which the symptoms were fairly typical, but in which very marked improvement subsequently occurred, and also the infrequency with which he has been able to obtain patellar clonus, then proceeds to the discussion of the skin reflexes, of which he mentions a considerable number. Among the most important of these is the Babinski toe phenomenon. He then gives in tabular form the results of his investigations in one hundred persons, who were apparently not suffering from nervous disease. These are as follows:

| | Present | Doubtful | Absent |
|--------------------------|---------|----------|--------|
| Patellar reflexes | 100 | — | — |
| Achilles tendon reflexes | 97 | 2 | 1 |
| Adductor reflexes | 38 | 8 | 54 |
| Tibialis posticus reflex | 22 | 6 | 72 |
| Abdominal reflex, upper | 98 | 1 | 1 |
| Abdominal reflex, middle | 99 | 1 | — |
| Abdominal reflex, lower | 98 | 1 | 1 |
| Cremaster reflex | 98 | 1 | 1 |
| Anal reflex | 80 | 7 | 13 |
| Scrotal reflex | 92 | 3 | 5 |
| Plantar reflex | 98 | 1 | 1 |

18. *Intracerebral Pressure and Cord Changes*.—Finkelnburg reports three cases of cerebral tumors occurring in children, all of which were in the cerebellum. The common characteristics of these cases were extreme intracranial pressure, with papillitis, loss of knee reflexes in two cases, early death, and at autopsies characteristic changes in the posterior and anterior roots. The ganglion cells in the anterior cornua, however, showed no changes, and there was no reason to suppose that any toxin was acting on the spinal cord because all the changes could readily be explained by the supposition of increased intraspinal pressure. Finkelnburg has now attempted to discover by experiment whether the intraspinal pressure is sufficient to account for all the changes found.

19. *Reflexes*.—A. Bickel reports an interesting experiment performed upon a dog. The posterior roots coming from the posterior extremities were cut, and it was found that there was total anesthesia in the hind legs, with loss of the tendon reflexes. After this condition had persisted for five months, transverse section was made in the dorsal spine, when it was found that irritation of the posterior roots caused movements in the extremities and in the tail. As the microscopical examination showed that no regeneration in the posterior roots had occurred, Bickel believes that the results are best explained by assuming that fibers from the hind legs enter the spinal cord at a higher level, and that the irritation of these produced in the hyperexcitable motor tracts the movements of the extremities.

(b) *Paretic Palpebral Elevators*.—Higier describes some peculiar movements in the eyelids occurring in a man 32 years of age. Under normal conditions the right eye was covered, and the left was abnormally wide. When he began to chew the right eye opened and the left closed. The patient had paresis of the right levator palpebræ, and in the left orbicularis oculi, otherwise his muscles were normal, excepting that the ptosis had existed from birth and the lagophthalmus only for 9 months. As the right eye could not be raised voluntarily, and was only elevated when the mouth was opened, it was necessary to make a careful study of the muscles, when it was found that the pterygoids and the muscles of the hyoid bones were the ones whose contractions were of special influence. The closure of the left eye is probably to be regarded as an associated movement.

J. SAILER (Philadelphia).

Annales Medico-psychologiques.

(1902. Vol. 15, No. 2, Mars-Avril.)

1. Examination of Paraphasia. G. SAINT PAUL.
2. Considerations of Late Epilepsy and Senile Epilepsy. PAUL MASOIN.
3. Suicide and Insanity. VIALON.
4. The Language of Idiots. L. MAUPATE.

5. Protection of the Fortune of the Mentally Deranged in Asylums. What it is, and what it should be. SAMUEL GARNIER.

1. *Examination of Paraphasias*.—The author discusses at great length the different types of aphasia, and devotes special attention to paraphasia, which syndrome he elucidates by a series of diagrams. He proposes a lengthy, complicated, and valuable series of tests designed to further dissociate many heretofore confused mental phenomena. Of the different forms of paraphasia, he distinguishes: (a) *Paraphemia*, the principal symptoms of which are dysphemias, dyslexia, and motor dysechophemia. In this form the faculty of oral reading may or may not be conserved; the faculty of mental reading may be similarly affected. Faculty of repetition is perfect. The influence of previous occupations should be taken into account. Other symptoms referable to the author's diagram, are given.

(b) *Paragraphia*, of which the main symptoms are dysgraphia, dyscopia, and motor dysechographia. The same series of tests for paraphemia are here applicable.

(c) *Associated Paraphemia and Paragraphia*.

(d) *Verbal Paracécité* (Word Blindness). The principal symptoms are dysopsia, dyslexia, sensory dyscopia.

(e) *Verbal Parasurdité* (Word Deafness). The principal symptoms being dysacusia, dysechographia, sensory dysechophemia.

(f) *Conduction Aphasia*. The vitiating of the communication between two centers.

(g) Examination of sensory or motor area corresponding to the wounded center.

Such is the bare outline of the author's scheme of examination.

2. *Late and Senile Epilepsy*.—Epilepsy does not spare the adult, and the relation, if any, existing between a late epilepsy and one of senility, is the thesis of the author. Two histories are detailed. Epilepsy occurring at the ages of 64 and 55 years respectively. In both patients there was an arterio-sclerosis, which the author holds is not the constant anatomical substratum underlying senile epilepsy, although it is widely recognized that arterial disease is the appanage of old age.

In an analysis of 1,196 subjects, those over fifty years of age were selected; of these there were 32, 12 being over sixty. This rarity does not seem to accord with the great amount of arterio-sclerosis at these ages. On the contrary, it would appear from the analysis, that hereditary predisposition seemed to occupy the most important position. The author does not agree with Maupate's dictum that after twenty years of age the hereditary rôle is unimportant. He believes he has seen cases that might be termed tardy epilepsy, in patients of from twenty-five to thirty-five years of age. The authors report but three cases to the general number. In all the family history was neuropathic, and in none did arterio-sclerosis seem a dominant factor.

3. *Suicide and Madness*.—The author continues his observations, speaking of the influences of imitation as an important element in the etiology of suicide. The article will be abstracted in full at its close.

4. *Language among Idiots*.—In this connection written language and mimicry are considered. The article is further continued.

5. *Protection of Fortune of the Insane*.—The laws bearing on this subject in various countries are given and discussed. It is a continued article, and its main deduction will be given at its close.

JELLIFFE.

Rivista di Patologia Nervosa e Mentale.

(Vol. vii, fasc. 5, May, 1902.)

1. A Case of Partial Epilepsy. G. CATÒLA.

1. *Partial Epilepsy*.—A description of a case in which operation confirmed the clinical diagnosis of brain tumor. The author's conclusions drawn from the literature of the subject are as follows: (1) the aura is the expression of a cortical irritation and represents the initial phase of the convulsive seizure; (2) the sensory-motor aura is the symptomatic expression of a stimulus which acts in the territory of the psycho-motor zone; (3) the sensory aura is the expression of a stimulus which acts outside of the psycho-motor zone and constitutes an important aid to the diagnosis of the site of a lesion located in the corresponding sensory centers or in neighboring parts; (4) as the aura is, for the most part, the result of a superficial and not very intense stimulus, it probably furnishes a more definite indication of the diseased site than the convulsion itself which is the result of a more intense stimulus and which carries with it phenomena of diffusion more or less extended and accentuated; (5) in rare instances a lesion capable of provoking convulsive phenomena is located exclusively in the white matter; in these cases it is impossible, during life, to make a differential diagnosis from the strictly cortical forms; (6) of great import is the site in which the convulsion begins, as well as its mode of diffusion; (7) Jacksonian epilepsy is not always the expression of a circumscribed cerebral lesion, but may accompany very diffuse lesions; (8) there are forms of Jacksonian epilepsy, which are due to extra-cerebral stimulus; (reflex forms) as well as those which are purely neurotic (hysterical forms); (9) other forms are due to auto- and hetero-intoxication, in which a lesion of the central nervous system is sought in vain; (9) nothing is known of the site of the cerebral lesion in masked partial epilepsy. (Equivalents.)

R. L. FIELDING (New York).

Brain.

(Vol. 25, 1902, No. 97, Spring.)

1. On Concussion of the Brain in Some of Its Surgical Aspects. HERBERT W. PAGE.
2. Analysis of 155 Cases of Tabes. BYRON BRAMWELL.
3. A Case of Congenital Muscular Atrophy (Family Type) and a Case of Hemorrhage into the Spinal Cord at Birth giving Similar Symptoms. C. E. BEEVOR.
4. A Brief Report of the Clinical, Physiological and Chemical Study of Three Cases of Periodic Paralysis. JOHN K. MITCHELL, SIMON FLEXNER and D. L. EDSALL.
5. Observations of a Case of Convulsions (Trunk Fit or Lowest Level Fit?). J. HUGHLINGS JACKSON and H. DOUGLAS SINGER.
6. On the Supposed Reversal of the Law of Contraction in Degenerated Muscle. W. PAGE MAY.
7. Internal Hydrocephalus in the Adult, with Remarks on the Etiology of Hydrocephalus and its Occasional Association with other Abnormal Conditions of the Central Nervous System. F. PARKES WEBER.

1. *Concussion of Brain*.—In an exhaustive and highly practical presidential address the author considers the surgical aspects of cerebral concussion. At the present time the surgeon is more active in his operations in and about the brain cavity than formerly, and he holds that surgery may be even bolder than it has hitherto been in endeavor-

ing to minimize and remove some of the causes which seem to be at the root of many of the later consequences of severe head injury, especially in cases where accurate diagnosis may be impossible and the surgeon has to rest content with speaking of them as concussion of the brain, uncertain as to the precise injury which has been inflicted. Obvious grounds for surgical interference are the elevation of depressed bone and removal of fragments which have been driven into the the brain substance, it being constantly borne in mind that injury to bone and the deeper table of the vault of the skull may be more extensive than outside appearances suggest. Wounds of this nature in which the scalp and the bones are extensively injured do not provide he thinks the worst varieties of head injury. The traumatic opening itself seems to relieve intracranial tension, a supposedly unfavorable feature. Compression of the brain from meningeal hemorrhage is another obvious reason for surgical procedures. In the same category are to be grouped laceration of the sinuses, lateral or longitudinal. Still other cases offer some attractions. He then discusses some of the more important symptoms. Convulsions of the Jacksonian type. These are rare and are usually the result of a circumscribed local lesion. General clonic convulsions, however, are not infrequent. Severe persistent pain of a peculiar differential type, elevation of temperature, being noticeable in a large proportion of the author's cases which terminated fatally, 103°-106° F. without suspicion of sepsis, being recorded.

The author believes it justifiable in cases in which the symptoms seem to point to meningeal hemorrhage to trephine the skull and make a diagnosis, believing it to be a better procedure than Tuffiers' lumbar puncture. In the matter of brain disorder following cerebral concussion, the author is inclined to lay considerable stress upon cerebral concussion as a cause for epilepsy and insanity. Operative procedure may offer some hope in the former condition, but it is of very undecided value in the latter.

2. *Tabes*.—The author here analyzes 155 cases of *tabes dorsalis*. Of these 77.4 per cent. were in the ataxic and 22.5 per cent. in the preataxic stage. One hundred and forty were males, 15 females. The age at onset between 20 and 30 years, 79; 30-40 years, 77; 40-50 years, 35; 50-60 years, 18; over 60 years, 2. Thus 74.1 per cent. began between the ages of 30 and 50. One case began at 21 and there was no syphilitic history; another at 73. The age at onset of 565 cases of Bonar, Thomas, Riley and Bramwell 12.9 per cent. between 20-30; 43.9 per cent. between 30-40; 31.4 per cent. between 40-50; 11.6 per cent. above 50. In 90 the patients were married; occupations were various. Under etiology 56.7 per cent. give a definite history of venereal sore; 27.7 per cent. seemed free from syphilis; 167 per cent. of these had had gonorrhea. In 40.5 per cent. the disease developed within ten years of syphilitic infection; 59.3 per cent. more than 10 years; in 10 cases the time was more than 20 years. Sexual excesses were not numerous. Marriage in these with histories of sexual excess seemed to aggravate the condition. Alcoholic excesses were present in but a small proportion, 10; injury was marked in 6 cases; exposure to cold and wet, 6; mental worry, excessive standing, scarlet fever, diphtheria, each seemed related to one or two cases. The author concurs with the general opinion that syphilis is the most important cause of *tabes*. It is distinctly not the only cause, he holds. Three main factors always need considering: (a) the original constitution of the nervous system; (b) syphilis; and (c) cord strain or irritation. As to the mode of onset in 152 this was gradual. The early symptoms were pains, 82 cases; diplopia, 73; ataxia, 13; loss of vision, 9; pains and ataxia, 6; bladder, 6; gastric crises, 5; numbness of feet, 3, etc. The

author then analyzes the different symptoms. Lightning pains were present in 148 patients; pains in the back, 45; girdle sensation, 67; paresthesia, 103; anesthesia of legs, 68; of arms, 20; of trunk, 40; in face, 2; analgesia in legs, 55; in arms, 40; ulnar analgesia, 20 in 60; Biernacki's sign, 14 of 60; analgesia of trunk, thorax and abdomen, 59; thoracic analgesia, 45 in 60; analgesia in face and head, 2; heat and cold, few; ataxia in gait, 120; Romberg's sign, 120; incoördination of legs, 117; incoördination of arms, 39; muscular sense in legs, 67; in arms, 24; muscular analgesia in legs, 38; muscular hypotonia, 38; knee-jerks lost in 127; in 20 the knee-jerks were present; 5 exaggerated; ultimately 132 lost knee-jerks; Achilles jerk, 44; absent in 52 cases; deep reflexes 23; upper extremities, jaw-jerk, 7; plantar reflex, 19; Babinski sign, 4; 3 showed no movement; 39 flexion, and 5 extension; cremasteric reflex, 30; abdominal reflex, 55; bladder reflex, 115 affected in some way; rectal reflex, 98; sexual reflex; 73 affected, 72 lost, 1 exaggerated; paralysis, 16; pupils, unequal in size in 54; 39 equal; contracted in 69, medium in 27, dilated 8; pupil reflex to light, lost in 121, 24 brisk, 116 sluggish in both sides, 5 on one, ultimately lost in 145; accommodation reflex, 13 absent, 132 present; Argyll-Robertson, 90, ultimately in 112. Bramwell gives no support to the theory that the Argyll-Robertson is present only in those cases with syphilis; optic atrophy, 33; crises present in some form in 24, trophic lesions in 9; mental symptoms more or less typical of paresis 16. The results show that 31 have died, 75 still live, 49 lost to observation. Of the 75 still alive, 16 are distinctly better, the remaining 59 are either worse or in *statu quo*. Causes of death various. Duration of fatal cases average 8.3 years; longest, 22 years; shortest 1½. This is a most interesting and valuable summary.

3. *Congenital Spinal Muscular Atrophy and Spinal Cord Hemorrhages*.—Dr. Beevor describes two patients admitted about the same time to the hospital, both of which presented almost identical clinical pictures with very dissimilar causative agents. There was complete paralysis of all the muscles of the lower limbs and trunk, excepting the diaphragm; in the first case there was also complete paralysis in both arms, and in the second partial paralysis of one arm. In both cases all the affected muscles were flaccid and did not react to faradism, and there was loss of sensation in the legs and trunk as high as the 2d dorsal segment. The symptoms in the first case were due to a progressive atrophy of the cells of the anterior horns and a degeneration of the posterior columns which had commenced *in utero*, and in the other to hemorrhage into the spinal cord caused by dislocation of the spinal column at birth, and to stretching of the right bronchial plexus.

4. *Family Periodic Paralysis*.—A clinical, physiological and chemical study of three cases of family periodic paralysis is contributed by J. K. Mitchell, S. Fexner and D. L. Edsall. The paper shows in a fragmentary manner that the paralytic attacks are probably the result of some metabolic disturbance, perhaps situated in the muscles themselves affected.

5. *Trunk Fits*.—Dr. Hughlings Jackson and Douglas Singer report the history of a case of convulsive muscular movements analogous to an epileptic convulsion, but originating at levels lower than the cerebrum. Bulbo-pontal fits is a name suggested. The first symptoms were involvement of muscles of both sides of the neck, back and front, soon followed by fixation of both sides of the chest. The authors refer to the possibility of the involvement of Horsley's and Schäfer's trunk centers and to Sherrington's and Grünbaum's recently described Rolandic center. The fits are described very minutely.

6. *Reversal of Reaction of Degeneration.*—The author concludes from his study that Pflüger's law of contraction, according to which excitation occurs only at the point where the current is leaving all of the excitable tissue, is as true for degenerated muscle as for all other excitable tissues, and that the reversal of the law described by clinicians is only apparent, and is determined by the special imperfect modes of testing which have been in use.

7. *Internal Hydrocephalus of the Adult.*—Dr. Weber in a lengthy communication on this subject concludes: that (1) the various kinds of hydrocephalus and effusion into the ventricles of the brain may be fitly compared to the various kinds of effusions into the pleura and the peritoneum (2) the cases of so-called idiopathic or simple internal hydrocephalus are probably nearly all due to more or less localized serous meningeal or ependymal inflammation and are strictly analogous to cases of serous effusion into the pleura or peritoneum, resulting from localized non-suppurative pleuritis or peritonitis. It is of course probable that there are several different microbic or toxic agents; (3) the reason why chronic inflammatory thickening of the membrane stretching from the cerebellum to the medulla and forming part of the roof of the fourth ventricle has so often been found present in fatal cases of chronic hydrocephalus, is not necessarily merely that the foramen of Magendie and the neighboring foramina have been closed by inflammation (as they very often must be in similar cases) but that this portion of the roof of the fourth ventricle is one of the sites of election for the localized inflammation which leads to hydrocephalus; (4) the theory of purely angioneurotic effusion to account for some cases of acute internal hydrocephalus has as yet not sufficient evidence to support it, though doubtless the amount of irritation required to produce the same pressure of effusion varies much in different individuals; it varies doubtless according to conditions (temporary or persistent, congenital or acquired) of the blood vessels and lymphatics which influence the local circulation; doubtless also temporary circumstances, such as exposure to cold or heat, the ingestion of alcohol or other stimulants, and reflex effects on the local circulation from other parts of the body, may influence the tendency to effusion in the ventricle; (5) many cases of apparently acute hydrocephalus in adults and children are really exacerbations of a chronic condition, sometimes, doubtless, dating from early childhood or birth, as evidenced by the history of previous cerebral symptoms by the relatively large size of the head, or by the post-mortem evidence of association with a condition of hydromyelia or syringomyelia, or, as in the present case, by excessive weight of the brain.

JELLIFFE.

Archives d. 'Electricité Médicale.

(No. 113. May, 1902.)

1. The Laws of the Transparency of Matter to X-rays and their Applications to Medical Radiology. L. BENOIST.
2. Lethargy, probably Hysterical in Character, and Its Treatment by Electricity. A. RIC and H. BORDIER.
3. A Phototherapy Apparatus in which the Iron Arc without Cooling Apparatus is Employed. A. BROCA and A. CHATIN.
4. The Medico-Electrical Installation in the Colonial Hospitals. DR. JOURDAN.
5. The Employment of Villard's Rectifying Interrupter for Producing X-rays and High Frequency Currents. DR. H. GUILLEMINOT.
6. A New and Simplified Light Bath with Incandescent Lamps. J. B.
7. The Utilization of 220 Volt Circuits to Actuate Röntgen Ray Coils. J. B.

1. *Transparency to X-Rays*.—By employing his *radiochronometer*, which has previously been described in these abstracts, the author has evolved the following laws relative to the specific transparency of matter to X-rays: (a) the specific opacity of a body for a given quality of X-rays and for a definite thickness of the standard is independent of the physical state of the body; (b) the specific opacity of a body is independent of the mode of grouping of its atoms or molecules; (c) the specific opacity is independent of the state of freedom or combination of the atoms. With the varieties of X-rays standardized by the author's method the classification, designation and rational usage of X-rays becomes a matter of precision.

2. *Lethargy and Hysteria*.—An account of a patient with recurrent attacks of hysterical lethargy which were characterized by an abnormal prolongation of the morning sleep, lasting on one occasion for twenty-two hours. As a result of numerous applications of a strong rhythmically interrupted galvanic current applied to the neck and forehead, the duration of the attacks gradually lessened and normal sleep returned.

3. *Phototherapy Apparatus*.—A detailed description of an apparatus employing the iron-arc as the source of the violet and ultra violet radiations. In contra-distinction to the Finsen apparatus no intervening cooling cells are necessary as very little heat is radiated from the iron arc, which is inclosed in a metal chimney with suitable apertures for the exit of the rays and for observing the arc.

4. *Electrical Installation*.—A technical article.

5. *Villard's Rectifying Interruptor*.—A description of an ingenious and simple polarized device for rectifying alternate currents for actuating X-ray coils. A freely vibrating flat spring whose natural period of vibration approximately equals the period of the alternating current to be rectified is finally clamped at one end between the poles of a permanent horseshoe magnet. To the free end of this spring is attached a light metallic plunger which dips into a cup containing mercury. Surrounding the spring at a suitable point is a helix of wire which is traversed by the alternating current which thus alternately reverses the magnetic polarity of the spring. A detailed description of the various procedures necessary for the exact adjustment of phase is also added.

6. *Light Bath*.—A description of a light bath, made in the form of a frame composed of vertical tubes to which are attached the incandescent lamp sockets. The whole is covered by a canopy with an orifice at the top for the patient's head.

7. *Actuating X-ray Coils*.—A description of a rather unsatisfactory method for actuating induction coils on 220 volt circuits which consists in charging a large condenser directly from the 220 volt circuit and then immediately discharging it through the primary of the induction coil.

R. H. CUNNINGHAM (New York).

Revue Neurologique.

(Vol. 10, 1902, No. 8, April 30.)

1. Cerebrospinal Meningitis in the Form of Infantile Paralysis: Cyto-diagnosis. RAYMOND and J. A. SICARD.
2. Infantile Spinal Paralysis Localized in the Muscles of the Superior Radicular Group of the Brachial Plexus. E. DUPRÉ and E. HUET.
3. A Particular Form of Relation of the Radicular Cells after Rupture of the Peripheral Nerves. G. MARINESCO.

1. *Cerebrospinal Meningitis and Infantile Paralysis.*—To recent works is due the review of acute infectious meningitis, the division into tuberculous and simple bacterial meningitis, and the classification of these according to the causal pathogenic agent. Two new methods, the bacteriological and the cytological study of the cephalorachidian liquid, obtained by lumbar puncture, have contributed to this end, and enable more exact diagnosis of the kind of case. Of the two methods the cytodiagnostic more frequently gives a positive response, more immediate and reliable than the bacteriological. A case is reported in detail of a child three and one-half years old, normal in every respect up to that age, who gradually lost appetite and became weak and ill, with symptoms of headache, painful vertebral column and articulations and contracture of muscles at the nape of the neck. After some improvement there occurred partial paralysis of the arms. Reaction of degeneration in certain muscles was determined.

Infantile paralysis seemed the diagnosis. True, brachial paralysis was present with well-marked radicular topography, but that was considered not unusual. At the advice of M. Jones, who made reservations in diagnosis and gave a hypothetical one of cerebrospinal meningitis, lumbar puncture was performed. A slightly cloudy liquid was obtained. On examination the percentage gave 80 polynuclear to 20 mononuclear cells. Second puncture, fifteen days later, gave a slightly clearer liquid with sufficiently abundant lymphocytes, the relation now being 70 mononuclear to 30 polynuclear. The diagnosis was altered to radicular brachial paralysis in the course of a cerebrospinal meningitis. Thus it was necessary to examine the etiological and pathological, if not specific unity of the meningeal and encephalomyelitic processes. One single pathogenic agent, pneumococcus or meningococcus, or still other microbes, may determine the disease by infection or by intoxication, either the localized lesions in the gray matter of the medulla, brain or roots of the medullary or of the peripheral nerves, or diffuse lesions in the different positions of the neurax. The idea of epidemicity, climate, age of the patient, primary or secondary localization of the meningeal affection are modifying factors of the virulence and vitality of the first pathogenic agent and may create diverse clinical types. Cytodiagnosis, examination of the cytological formula, quantitative and qualitative of the cephalorachidian liquid may give greater exactitude to the syndromes, still badly classified.

2. *Infantile Spinal Paralysis in the Brachial Plexus.*—Infantile spinal paralysis, paralysis and atrophy of the muscles may cause a disposition analogous to that in radicular lesions. A rare case is reported: a perfectly normal child of nineteen months with healthy parents was suddenly taken with a fever, but did not seem to suffer; after some days the right arm was noticed to be paralyzed; later the forearm hung in the habitual attitude of superior radicular paralysis of the brachial plexus; also the shoulder was slightly raised on the same side. Paralysis of the deltoid was shown by very pronounced distension of the scapulohumeral joint; finger movements were good. In electrical examination reaction of degenerescence was obtained in muscles of the Duchenne-Erb group. The child was regularly treated by galvanic electricity at the Salpêtrière. Infantile cervical paralysis was the diagnosis which immediately suggested itself; and the fact that in the inferior radicular group one muscle, the short abductor of the thumb, remained greatly altered, was in accord, and suggested acute anterior poliomyelitis. It may be asked whether there were not spinal or radicular alterations developed in the course of a cerebrospinal meningitis. Several interesting cases

of this nature are touched upon. The exact factor in diagnosis is given in lumbar puncture and examination of the cephalorachidian liquid; but this case came too late for that. Thus infantile paralysis is preferred to cerebrospinal meningitis as diagnosis, first on account of the precocity of the paralytic troubles, which are later in meningitis; also because of the absence of pain and stiffness of the side and neck; also the short duration of the paralysis in certain muscles.

If, as we believe, this was a case of acute anterior poliomyelitis, this observation furnishes a novel example of myelopathic muscular atrophy of radicular topography.

3. *Changes in Radicular Cells after Rupture.*—A type in this class of cells has been noted worthy of remark; the altered cell-bodies not only fail to present central chromatolysis, which is normally seen after the solution of the continuity of peripheral nerves, but on the contrary the chromophilic elements, sometimes massed and distributed concentrically about the nucleus, were strongly colored. Usually they form filaments more or less oblong in layers about the nucleus. The size of the filaments is variable, sometimes of short diameter, sometimes with longitudinal diameter scarcely exceeding transverse. Otherwise they look like long filaments. Illustrations are given with the article. Without the central zone was a peripheral arc, where colored corpuscles in the form of long filaments, much paler than those of the perinuclear zone, and of varied directions, were found; in the cell-body they were distributed in layers about the central zone; in the periphery the direction was longitudinal. In the protoplasmic prolongations the filaments were equally longitudinal, and notably one could see on some that not only in entering the cellular body did they keep their primary direction more or less independent of that shown by the corpuscles of the cellular body, but they crossed the cell-body to continue in protoplasmic prolongations nearby or on the opposite side. The special distribution of the chromophilic bodies of the protoplasmic prolongations following ablation of a more or less long nerve tract was found by the author, and the importance was hardly realized at first. The intimate relations of the tracts of fibrils of the achromatic substance with the corpuscles of Nissl was recognized; was this, then, a special reaction for ruptured nerve, as it has been noticed only in such cases? Rupture hardly explains it, as there was possibly a latent disposition brought into evidence by traumatism. After traumatism greater absorption of nutritive liquid takes place. This explains alteration in the volume of the cell; moreover, the fibrillar fascicles were more or less dispersed after serous discharge, so that the tract of chromophilic elements in the interior could be more easily seen. But this did not explain why the chromophilic elements were paler and less prominent in the periphery than in the central part. It may be admitted, the author says, from work done on the fine structure of cells of the spinal ganglia, that in certain cells the relation of the axis cylinder is closer to the peripheral fibrils, while in others the contrary is the case.

JELLIFFE.

Neurologisches Centralblatt.

(1902. May 1, No. 9.)

1. Judges and Experts. NÄCKE.
2. Notice on Character Changes following Brain Injury. M. FRIEDMANN.
3. Further on Asthenic Paralysis. S. GOLDFLAM.

1. *Judges and Experts.*—A reply to Hoches' article (N. C'b't, No. 7) concerning the relations of the judge and the medical expert.

(2) *Brain Injury and Character Changes.*—Friedmann reports the pathological findings in two rabbits on which experimental puncture of the brain had been performed. A complete change in the character of the animals developed. This consisted mainly in a condition of ceaseless activity, and a change to a wilder disposition in the animals. In these animals there was present an intense lymphoid inflammation in the lymph spaces, about the blood vessels and in the pericellular spaces. These changes were very elusive and were considered as the manifestation of a condition of chronic irritation.

(3) To be continued.

McCARTHY (Philadelphia).

MISCELLANY.

ALCOHOL A FOOD OR POISON? KASSOWITZ (Pflüger's Archiv. f. Physiol., June 3, 1902).

The conclusions of this author, as to whether alcohol can, in the same organism, act at once as a food and a poison, are as follows: There is a supposition that alcohol has a nutritive value, in that, during the process of its metabolism, a portion of it is directly split up or burned without being first built up into the protoplasmic substances. There follows, as a natural corollary to this belief the assumption that foods equally valuable as fuel can be substituted for one another. This, however, has been proved false by authenticated experiment. This hypothesis disposed of, there remains the reasonable supposition, borne out by the facts obtainable, that all foods are assimilated into the protoplasmic structures, the products of metabolism resulting from the splitting up of this chemical unity. A high degree of complexity of the protoplasmic molecule and instability of equilibrium are implied by this assumption. The labile molecules of protoplasm are disorganized by all stimuli and chemically active poisons, therefore, since protoplasm is distributed by alcohol, not only as a stimulus but also as a poison, it follows that it cannot also act as a food. The toxic effect of alcohol is an increased nitrogenous elimination, the protoplasm disorganizing, either with the splitting off of fat and nitrogenous waste products, or a nitrogenous retention manifested by the splitting off and formation of gelatin-yielding tissues in the form of connecting tissue fibers, showing itself by the formation of inflammatory products in the different tissues and organs. After a short period of stimulation by alcohol the production of carbonic acid is decreased by paralysis of the centers of innervation and the consequent diminution of their activity, which does not mean a sparing of the tissue-fats and proteids, but is an indirect result of the toxic action of alcohol. The observation that a diminished working capacity and dissipation of the vital resources follows the substitution of alcohol of equal caloric power for a part of one's non-nitrogenous food, accords with the theory as stated. That the nutritive property of a substance cannot depend upon oxidation in the organism, and, therefore, that alcohol is useless as a food, is shown the author by these facts, and from them he draws the conclusion that neither for the sick nor well should alcohol be used for the purpose of supplying food.

JELLIFFE.

SENILE TABES. A. PITRÉS (Jour. de Med. de Bordeaux, May 18, 1902).

Although locomotor ataxia is most common between the ages of twenty-five and forty-five years, this author reports that one-fourth of the cases which he observed occurred after the fiftieth year, and of these three were after the seventieth year. Of these three, two had

enjoyed good health up to that time and the third had manifested tabetic symptoms after an attack of influenza. While the symptoms of senile tabes are generally the same as those shown in earlier life, the progress is usually more rapid and has no pre-ataxic stage. In two of the cases noted, autopsy showed marked atheroma of the peripheral and large spinal arteries, with atrophy of the posterior roots and sclerosis of the posterior columns, as in ordinary tabes. The author concludes that senile tabes is not so closely related to syphilis as that of early life, while it may be indirectly attributed to any acute or chronic cause inducing degenerative changes in the arterial system, as senility, alcoholism or infectious disease, and very likely constitutes a manifestation of spinal arterio-sclerosis, rather than an effect of luetic infection of the nervous centers.

JELLIFFE.

CURE OF TUBERCULOUS MENINGITIS BY CREOSOTE. THOMALLA (Berlin. klin. Woch., June 16, 1902).

This author cites a case in which the use of creosote in generous quantities resulted in recovery of a patient suffering from tuberculous meningitis. In the treatment of the patient, reliance was placed on careful nourishment, the administration of potassium iodide and finally creosote. The subject of treatment was a young man of twenty whose parents had both died from tuberculosis, and who had already undergone cauterization for local tuberculous affections. The administration of creosote was begun at the commencement of the attack, the doses increasing from day to day until they reached the quantity of four and a half grams. administered in capsules three times each day. The diagnosis of this case was confirmed by Professors Von Michel and Gerhard. It would seem to be the opinion of several eminent practitioners that the drug should be administered in as large quantities as possible, inasmuch as it is rapidly eliminated. Thomalla limits the dose only at the point of toleration, and also calls attention to the fact that it is found in the blood serum in a like proportion. Others, among them Burlureaux and Chaunier, place the limit at five grams, the latter recommending it only in conjunction with outdoor treatment. It should be borne in mind that the efficacy of the use of creosote in the treatment of tuberculosis lies in its deadly effect upon the bacteria in the diseased tissues which it penetrates.

JELLIFFE.

THE VOLUNTARY ERECTION OF HUMAN HAIR. S. S. MAXWELL (Amer. Jour. Physiol., July 1, 1902).

The erection of the hair, by the contraction of the arrectores pilorum muscles attached to the hair follicles, through the stimulus of fright or cold, which cause a bulging of the hair-follicles (goose flesh) is well known. The author cites a case of a patient who could at will erect the hair by voluntary bulging of the hair follicles. No edema or resemblance to factitious urticaria or the reflexes ordinarily seen in cases highly neurotic were present; neither was there change in color, with the exception of a slight pallor caused by the vasomotor change. The condition could be best observed on the arm, thigh, back and hips, and associated with it a remarkable development of the dermal structures was observed. The young man also had unusual control over the muscles of the ears and face. All these powers of control appeared to be obtained by inheritance rather than practice, for the subject's father also possessed them to a remarkable degree. Whenever he induced the phenomena the patient underwent modifications of the movements of respiration, the breathing grew deeper or ceased momentarily, and the chest felt as if more than usual in the phase of inspiration. The move-

ment gave relief from headache at times and was accompanied by sensations of pleasure; there was also dilation of the pupil of the eye, which would lead one to observe that the relation of vasomotor constriction and the dilation of the pupil was present here. It is the opinion of the author that in this case an unusual inherited neuromuscular and dermal development was displayed in connection with voluntary control of the arrectores pilorum muscles. In the lower animals the power of the erection of the hair would seem to be accompanied by a high development of the panniculus structures. In order to find out whether the arrectores pilorum contained striated muscles or not a biopsy was performed, but only smooth muscle was revealed. This discovery proved that the former distinction between voluntary or striated and involuntary or unstriated muscles could no longer hold good, as it was an example of smooth muscle which was at the same time voluntary. Where immediate and rapid action is required it would appear that striated muscles occur.

JELLIFFE.

ACTION OF BATHS ON METABOLISM. H. WINTERNITZ (Deutsch. Arch. f. klin. Med., 1902, Vol. 72, Nos. 3 and 4).

The results of the studies of this author are stated by him as follows: (1) The sand-bath considerably increased the consumption of oxygen and caused a discharge of carbonic acid gas more than that occurring in fever, although there was no increase in temperature or change in the general conditions; (2) the mud-bath caused no especial change in oxidation; the application of irritants like mustard to the skin increased the production of heat and carbonic acid, and the consumption of oxygen; (3) the carbonic acid bath caused absorption of the gas; (4) the sulphur bath appeared to have no effect upon the exchange of gases.

JELLIFFE.

HYSTERIA AND THE LACRIMAL REFLEX. W. G. SPILLER (La. Sémin. Méd., 1902, No. 23).

From the observation of two patients the author suggests systematic tests for the presence or absence of the tear reflex when there is a failure of touch sense about the face, as a sure means of distinguishing between true centric and peripheral nervous disease and hysteria. The two patients upon whom these observations were made had had the Gasserian ganglion taken from one side for obstinate neuralgia. On tickling the nasal mucous membrane on the side of the operation, he found that no tears could be made to flow from the eye on either side, but if the mucous membrane of the nares on the normal side was touched, an immediate reflex flow of tears followed. When bits of paper were placed between the upper lid and the ball of each eye no tears appeared on the side from which the ganglion had been taken, but there was a copious flow from the opposite eye. The important differential point demonstrated by these experiments is that, while the manifestations of hysteria attack the eye quite as much as the other organs, chiefly in the form of anesthesia of the conjunctiva, and the palpebro-ocular reflex may be totally abolished, the lacrimal reflex is not affected at all. By the use of Dr. Spiller's experiments hysterical bulbar anesthesia can be readily distinguished from that due to trigeminal partial or total paralysis.

JELLIFFE.

Book Reviews

CLINICAL PSYCHIATRY. A TEXT-BOOK FOR STUDENTS AND PHYSICIANS. Abstracted and adapted from the sixth German edition of KRAEPELIN'S "LEHRBUCH DER PSYCHIATRIE." By A. ROSS DEFENDORF, M.D., Lecturer in Psychiatry in Yale University. New York. The MacMillan Company.

The object of this work, as the author states in his preface, is at once to provide a text-book for his classes, and to make accessible to the English reading profession the teachings of Kraepelin in psychiatry. In this latter capacity a review of the work will necessarily involve, to an extent, a criticism of the German school of psychiatry of which Kraepelin is the acknowledged head.

The book is divided into two parts: the first dealing with General Symptomatology; the second with the Forms of Mental Disease.

The first part—General Symptomatology—takes up seriatim the disturbances of perception, mental elaboration, the emotions, volition and action. It is an admirable although not very exhaustive exposition of the subject, and shows a praiseworthy departure from the beaten paths in this domain. There is an evident attempt to call upon the modern conceptions of psychology to assist in the explanation of symptoms with a most happy result. The style is somewhat labored and cumbersome and to those unacquainted with German methods of expression there are many terms which at first must be confusing, such as "flight of ideas" and "pressure of activity."

The second part, devoted to a description of the Forms of Mental Disease, is divided into thirteen sections.

Section I gives a short and concise description of fever delirium and the post-febrile psychoses.

Section II is devoted to the exhaustion psychoses, collapse delirium, acute confusional insanity (amentia), and acquired neurasthenia. More space might with advantage have been devoted to this section, particularly to the descriptions of collapse delirium and acute confusional insanity. Confusional insanity has never received sufficient recognition in this country and alienists still go on, especially in state hospitals, classifying these cases as melancholias and manias and by so much distorting their statistics. It should have official recognition in all such institutions.

Section III is devoted to a consideration of the intoxication psychoses. The descriptions are good and for the most part conform to well established lines.

Section IV briefly considers the thyroidogenous psychoses. The author has purposely cut this short as having little practical importance for American alienists.

Section V on dementia præcox is one of the best in the book and evidently here the author has translated quite fully from the original as the descriptions are full and quite Kraepelinian. The clinical delineations of three forms, the hebephrenic, katatonic and paranoid are most admirable, and if they do not carry the conviction of the existence of such species we must at least acknowledge the grave significance of many of the symptoms upon which their diagnosis is based: i.e., stereotypy.

verbigeration, negativism, muscular tension, emotional deterioration, the so-called katatonic stupor and the development of mannerisms.

Sections VI and VII on dementia paralytica and organic dementia respectively contain little worth special mention. The description of paresis is full but leaves the old saw as to its etiology *in statu quo*, whereas organic dementia is treated much too briefly.

Section VIII on the involution psychoses is noteworthy, particularly because of the restriction of the term melancholia to mental depression occurring at this time.

Section IX devoted to the manic-depressive insanity comprises with Section V on dementia præcox really the meat of the book. Kraepelin's teachings that all the manias and melancholias together with the various forms of circular and alternating insanities are but clinical manifestations of one and the same underlying condition, parts of the same disease, are only beginning to be noticed, but wherever these views have met with serious consideration conviction of their soundness has inevitably followed. The wonderful way in which difficult clinical problems are cleared up by this conception recommends it at once to all who have mastered it. Particularly is this so with reference to those conditions now known as "mixed states," which heretofore it has been impossible to classify in any of the niches of the psychiatric nosology.

Section X on paranoia is rather meager for so important a subject, only thirteen pages being devoted to its consideration. The erotic and religious varieties merely receive mention, while the original paranoia of Sanden (*originäre verrücktheit*) is not noted.

Section XI deals with epileptic, hysterical, and traumatic insanities. In spite of the fact that the author states in the preface that special stress has been laid on this section the descriptions of these several conditions are not over full. This is especially true of that part devoted to hysterical insanity. While the name of a German translation of one of Janet's works appears in the bibliography—"Der Geisteszustand der Hysterischen"—there is little in the text to indicate that the author has read it, and that most admirable later work by the same author, "Névroses et Idées Fixes," is not even mentioned.

Section XII deals with constitutional psychopathic states. Here we might expect to find a consideration of the *délire des dégénérés* of Magnan and the French school, but the condition is not mentioned. A rather forced distinction is made here between compulsive and impulsive insanity based upon the definitions in the first part of the book as follows: "Compulsive acts are those which do not arise from normal antecedent consciousness of motive and desire, but seem to the patient to be forced upon him by a will which is not his own."

"Impulsive acts are distinguished from compulsive acts, in that they do not seem to the patient to be influenced from without, but are the direct expression of a sudden overwhelming impulse, which gives no chance for reflection or resistance." The author acknowledges that these two forms are closely allied on page 391, where he says: "On the other hand, impulsive insanity approaches very closely some forms of compulsive insanity." It would seem that the French conception of these states as outlined by Régis was far preferable.

Section XIII contains a terse description of imbecility and idiocy. The imbeciles are divided into two clinical groups, the stupid and the active; while the idiots are described under the designation of severe and light forms. There is no attempt to classify them in accordance with the clinical types so well delineated by Ireland.

In conclusion we would say the first part—General Symptomatology—and the sections on dementia præcox and manic-depressive insanity, are most excellent and fully justify the existence of the work, rendering as they do the teachings of Kraepelin and the German ideas accessible to English-reading alienists, and we think no library in this special branch of medicine can be complete without either it or its German counterpart.

WM. A. WHITE (Binghamton).

DIE OTITISCHEN ERKRANKUNGEN DES HIRNS, DES HIRNHAÜTE UND DER BLUTLEITEN. Von Dr. OTTO KÖRNER, Ao. Professor der Medecin, Director der Klinik und Poliklinik für Ohren und Kehlkopfkrankheiten in Rostock. Mit einem vorwort von ERNST VON BERGMANN. Dritte Auflage. J. F. Bergmann. Wiesbaden, 1902.

This work covers in a very comprehensive and critical manner a field of medicine which is of the greatest importance and interest to the neurologist. It is true that he shares this field in common with, though perhaps to a somewhat less active degree, the otologist and yet our present knowledge of the conditions arising in the cranial cavity is so deficient that the combined efforts of both specialists are needed for its furtherance. As a contribution in this direction the work of Körner, whose authority is recognized the world over, must assume a high rank.

The book is an enlargement and revision of the second edition and contains much additional matter gained from a wider clinical experience and riper knowledge as well as from an exhaustive study of the literature of the last few years.

The first part is devoted to a consideration of uncomplicated disease of the meninges. Serous meningitis is recognized as occurring frequently in association with otitis and mastoid disease, and Körner even claims that it is often combined with an encephalitis. In treating otitis cases, where such complication is suspected, he urges that after operating upon the primary focus in the ear the surgeon should wait before proceeding to the dura in order to give the meningitis serosa time to subside, as it often does, and also thereby making possible a differential diagnosis from other forms of meningitis and intracranial disease.

In the section devoted to sinus disease Körner calls attention to the greater frequency of involvement of the right side in sinus thrombosis and extra-dural abscess, and explains this by the anatomical relations of the parts. Osteophlebitis or phlebitis of the veins of the mastoid process causing septic infection of the sinus, is a condition which he, first, really described and called to the attention of the medical world, and in this edition he maintains his views regarding its nature and substantiates them by additional clinical data. He also makes a distinction between pyemic and septic infection as it occurs through the medium of the sinuses.

In his operative procedure he recommends following the advice of Lane of exposing the dura of the middle and posterior cranial cavities when pus or cholesteatomata are present in the mastoid, instead of relying on symptoms for the diagnosis of intracranial conditions. He has never seen any harmful result from this step, and he has twice discovered and relieved unsuspected extra-dural abscesses. His consideration of the subject of brain abscess is very thorough and most instructive. In this condition he expresses the opinion that the chisel used vigorously undoubtedly causes a latent abscess to become active, or to rupture into the ventricles; a sinus thrombus to become loosened from the sinus walls and a localised meningitis to become diffuse,—facts which it were well to bear in mind.

Of especial interest to the neurologist from a diagnostic standpoint

are his conclusions as to the value of the lumbar puncture. He classifies the findings as follows: First, when a very much clouded fluid containing pus cells and bacteria is obtained, it means diffuse purulent leptomeningitis. An exception is in those rare cases where the suppuration is limited to a part of the vertebral canal, and which is not in relation to the meningitis of the brain. Second, a lightly clouded fluid containing bacteria can signify a diffuse or a circumscribed meningitis. An exception was a case of Briegers, in which an abscess in the temporal lobe led by a fistula into the ventricle and thus caused the lumbar puncture fluid to be purulent with the disastrous consequence that no operation was undertaken because of the presence of meningitis. He cites also a case by Wolff and Ruprecht where the puncture caused a similar faulty diagnosis.

The bibliography on each subject is very full and complete up to October, 1901. There is page reference to every case or author mentioned in the text, thereby doubly enhancing the value of this excellent treatise.

It certainly deserves translation into English, that it may serve as a guide to all who have to deal with cranial disease.

I. STRAUSS (New York).

News and Notes

DR. A. P. OHLMACHER has been appointed superintendent of the Ohio State Hospital for Epileptics at Gallipolis.

DR. F. M. JELKS has removed from St. Louis and has taken up the management of the Ozark Sanitarium on the death of his father, the late James T. Jelks.

DR. L. PIERCE CLARK, associate editor of the JOURNAL, has been spending the past year in Europe. He returns to take up practice in New York this fall.

DR. FLORENCE HULL WATSON, first assistant physician of the Delaware State Hospital at Farnhurst, formerly in charge of the Pathological Department of the State Hospital for the Insane at Norristown, Pennsylvania, has resigned to continue work in Europe.

DR. ROSS DEFENDORF, of Middletown, Conn., has been spending the summer at Heidelberg, working with Professor Kraepelin and Nissl.

MISS ELLA WELBOR CRAMER AND DR. JOHN JOSEPH KINDRED, of New York, were married at the American Church, Luzerne, Switzerland, at high noon, July 10, the civil ceremony having taken place in the Hotel de Ville, Luzerne; an hour earlier, in the presence of Mr. Morgan, United States Consul to Luzerne; Mr. Julius Hartmann, former United States Consular Agent; Mrs. E. A. Wheeler and several other friends of the bride and groom. The bride is a graduate of Vassar College and is popular in society and church circles in Poughkeepsie, N. Y., her native city. She is the only daughter of the late Mr. and Mrs. George Edward Cramer, the latter having been one of the most influential and public spirited citizens in Poughkeepsie, and a member of the firm of Reynolds and Cramer of that city.

DR. Kindred is a native of Virginia, but for some years has been a prominent physician and specialist in New York City. He is also president and consulting physician of the RIVER CREST SANITARIUM for nervous diseases at Astoria, Long Island, New York City.

THE last number of the *Rivista Sperimentale di Freniatria*, vol. 27, fas. 3, 4, contains an excellent portrait of Dr. A. Tamburini, with a short dedication and notice as a tribute to the twenty-fifth anniversary as editor of this excellent Rivista.

DOCTORS G. CESARE FERRARI AND ARTURO DONAGGIO, of the Psychiatric Institute of Reggio, have obtained the title of free docents in clinical psychiatry at the University of Modena.

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THE
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Original Articles.

A STUDY OF LANDRY'S PARALYSIS; WITH A REPORT OF
THREE NON-FATAL CASES.¹

BY THEODORE DILLER, M.D.,
PITTSBURG.

Ever since Landry, in 1859, gave the account of a patient who exhibited a certain set of symptoms and whose illness ran a certain course, there has been an increasing number of more or less similar cases reported bearing his name. The most generally accepted definition of Landry's paralysis seems to have been that given by Leyden and quoted approvingly by Thomas², that it is a rapidly ascending motor paralysis of sudden onset, with loss of knee-jerks, with slight or no sensory symptoms, without atrophy, loss of control of sphincters, electrical changes, or mental involvement and which runs a rapid course without fever and terminates fatally, usually exhibiting bulbar symptoms near the end. Mills and Spiller³, writing more recently (1898), understand Landry's paralysis to be: "A disease in which rapid loss of motor power usually begins in the lower limbs, and the paralysis is flaccid and associated with paresis and loss of tendon reflexes. The upper extremities are soon involved, and bulbar symptoms develop after a few days. Pain is not a prominent symptom. Death occurs within a week or ten days, though in some cases it may be delayed, and in

¹A paper presented at a meeting of the Pittsburg Academy of Medicine, held Sept. 29, 1902.

others, more rare, recovery may ensue. There may be a descending as well as an ascending form of paralysis. The electrical reactions are normal and patients are perfectly conscious of their condition." Thus it will be seen that a descending type is allowed, non-fatal cases are admitted, and paresthesia is considered a constant symptom although severe or persistent pains are not accounted as belonging to the clinical picture. Absence of marked elevation of temperature and non-involvement of the sphincters are by most writers named as distinguishing marks of the affection although not included in Mills and Spiller's definition. Landry's post-mortem findings were negative as were most of those of the earlier investigators.

The literature of Landry's paralysis has now become quite extensive; and in the several papers by Diller and Meyer⁴, Bailey and Ewing⁵, Mills and Spiller⁶, Thomas⁷, Knapp and Thomas⁸, Taylor and Clark⁹, Raymond¹⁰, Oppenheim¹¹, and Schwab¹², will be found references to almost all the reported cases of this disease up to the year 1901, together with critical studies based upon them. A review of this literature, in a most striking manner, bears witness to the strong reverence which exists in the medical mind for a literary tradition, and the great hinderance which it may prove to a proper study of a disease. After forty years, during which many scores of reports of Landry's paralysis have been made, it remained for Taylor and Clark¹⁸ to entirely break away from the literary tradition of Landry's paralysis in these forcible words: "On the basis of an acute, clinical, and necessarily highly superficial, pathological observation made many years ago by Landry, subsequent observers, led largely by a name, have been attempting to force into the narrow clinical conception outlined by Landry, various symptoms, none of them fundamental and supported by no constant pathological findings, and still less by a definite etiology. The so-called disease has with each new investigation lost something of its coherence. We have persistently clung to a name and demanded that the symptoms which it represented should conform to our preconceived idea." These views of Taylor and Clark are endorsed by a later writer, Schwab¹⁴, and are to my mind none too strong. Although some recent

writers enlarge upon Landry's original definition and recognize "transitional forms," they have practically accepted the older idea that Landry's paralysis is a disease entity. Even such an acute observer as Dejerine¹⁸, in his recent work, follows Landry in his description almost slavishly, accounting rapid ascending course, loss of reflexes, absence of marked sensory symptoms, absence of fever, preservation of sphincters and a fatal termination as marks of the disease. Schmaus¹⁹, in his book published only last year, adopts the same views.

In the various attempts to study Landry's paralysis, the general plan has been to reject all cases which did not pretty closely conform to the type Landry described, or which did not come to autopsy, while but little attention has been paid to the etiology; and the non-fatal and atypical cases have been thrown out of consideration. If this plan were continued, the original Landry's paralysis clinically would, of course, be preserved despite the variable symptomatology and the conflicting post-mortem findings. Indeed, Goebel¹⁷, writing in 1898, practically makes a plea for this method of study and deplors the tendency to bring many types under the head of Landry's paralysis.

While the various post-mortem studies have added much to our knowledge of Landry's paralysis, if not offering a full explanation of it, and are most praiseworthy, it occurs to me that too little attention has been paid to the clinical side, especially to the study of non-fatal and atypical forms of the affection. For it will no longer do to throw out cases which do not terminate fatally, or which depart from the classic type as described by Landry. It would be as reasonable to establish a pathologic basis by throwing out all findings which do not fit a certain type, as to insist upon such a clinical basis; and the pathologic studies have certainly revealed one thing, *viz.*: that there is no constant anatomic basis for the disease, even for the typical cases.

Let us now look at some of the clinical reports with the view of determining the range of symptomatology of the affection, noting especially those clinical manifestations which represent departures from the older definition of the affection.

Bailey and Ewing, in their elaborate and painstaking study

in 1896, collected all the cases which had, up to that time, been examined post-mortem, 75 in number. But of these 31 were thrown out of consideration either because post-mortem examinations were incomplete or unsatisfactory, or else because the cases were atypical clinically. Cases of Bernhardt, Pitres and Vaillard, Hayem, Pribytkow and Brochain, because of the presence of marked sensory phenomena; the cases of Vierordt, Strümpell, Eichorst, Diller and Meyer, because the course was prolonged or chronic; while Roth's case is excluded because the paralysis was not ascending in type. After this weeding-out process, Bailey and Ewing consider 44 of the 75 collected cases. In 12 out of 32 where the symptom is recorded, the sphincters were involved *i.e.*, in over one-third of the number analyzed. The knee-jerks were lost in 31 cases, diminished in 2 and increased in 2. Of 20 cases the electrical reactions were normal in 19 and lost in only 1. The temperature was normal in 20, while 14 exhibited moderate fever. As to sex there were 29 men and 10 women. In 3 cases the paralysis affected the arms and legs simultaneously; while in the remaining cases it began in the legs, in 4 cases in one leg before the other. There was sensory involvement in 13 cases.

Thus it will be seen that after excluding a large number of cases because they did not fit into the classic clinical type that certain atypical features are present in those admitted, *e.g.*, sensory involvement in one-third and sphincter involvement in more than a third of the cases. In 3 cases the paralysis was not ascending but began in all four members simultaneously.

Thomas¹⁸ reports 2 cases which came to autopsy in both of which degeneration of the anterior horn cells and peripheral nerves was discovered. Thomas holds that Landry's paralysis is an affection of the lower motor neurone, and that the sensory apparatus is uninvolved. He mentions, however, that there was tenderness on pressure in one of his cases, and of the other that the patient's chief complaint on entering the hospital was numbness of the legs.

In Goebel's case, weakness of the vesical sphincter and diminution of sensation are noted as symptoms which appeared late in the disease.

Of Knapp and Thomas'¹⁹ three cases only one was fatal and in this case there was some affection of the sphincters and moderate sensory disturbance. In one of the non-fatal cases, there was loss of control over the anal sphincter, sensory disturbances and muscular atrophy. The second non-fatal case also exhibited muscular atrophy.

In a case reported by Burghart²⁰ electrical reactions of degeneration were observed. This patient recovered somewhat, but finally died at the end of 14 days.

In a fatal case recorded by Robinson²¹ numbness of the feet was the first symptom; pain in the back was complained of and the legs were tender when grasped.

In the fatal case recorded by Taylor and Clark²² pains were present for a month before motor symptoms appeared. Pains in the back and dorsal portions of the thighs were at times extreme. Marked fibrillary tremors formed part of the clinical picture. Pressure over the nerve trunks produced no pain. Clinically this case resembles pretty closely one of my own.

Mills and Spiller state, of the case they record, that some weakness was present for a month before the actual symptoms of the disease appeared. Numbness of both hands with some pain and inability to perform finer movements were noted. Power left the arms first.

Worcester²³ mentions loss of sensation in the legs as a symptom in his case. Numbness in the hands with some loss of the finer movements were premonitory symptoms. The patient was mentally apathetic. There was rapid motor and sensory involvement.

Marie and Marinesco's²⁴ patient suffered intense pain over the entire body although a microscopic examination showed the peripheral nerves to be normal.

Hirtz and Lèsnè²⁵ describe a case which was at first acute and then chronic, and which terminated fatally at the end of four months. The muscles of the lower extremities were very tender and the seat of severe pains, increased upon movement.

A. Schultz²⁶ records two fatal cases. In the first case, the symptoms were those of acute ascending neuritis. In the second case the symptoms followed multiple neuritis in an alcoholic subject.

A case described by Oettinger and Marinesco²⁷ presented much objective diminution of all forms of sensation.

In a case recorded by Howard²⁸ paresthesia was the first symptom, and tingling and numbness were very distressing. The muscles were affected in the following order: bulbar, hip, thigh, shoulders, arms, legs, hands, feet, labial, diaphragm.

Spiller²⁹ reports a typical case in which improvement set in after two or three weeks and progressed to a complete recovery. Nearnow³⁰ also reports a case in which recovery occurred. Rowden³¹ reports the case of a boy aged 10 years in which the paralysis was of a rapidly descending type beginning with headache, pains in the neck, a temperature of 103, and terminating fatally in a few days.

In Schwab's³² case, which terminated fatally at the end of seven weeks, there was paresthesia in the fingers of the left hand for a week before the onset of the paralytic symptoms. There was marked hyperesthesia of the abdominal walls.

Wappenschmidt³³ reports a case of sudden onset attended with pain which ran a rapidly fatal course. The peripheral nerves were found normal although the clinical signs had pointed to a peripheral neuritis.

In a fatal case reported by Griffith³⁴ in a man aged 32, there were weakness and malaise for a week, then severe pains in the legs followed by a rapidly ascending paralysis which became complete. The diaphragm was paralyzed. There was some blunting of sensibility. The sphincters remained intact.

Paresthesia of the hands and vertigo were for eight days premonitory symptoms in a fatal case reported by Kapper³⁵. Then headache and pains in the legs appeared, followed by rapidly ascending motor paralysis involving the bulb, laryngeal palsy occurring; and death ensued. The knee-jerks were lost. Consciousness was preserved intact to the end. In the beginning of the attack hysteria was considered. Although the cord and peripheral nerves were examined by the Nissl and osmic acid methods no pathologic changes were discovered in them. A bacteriologic examination was likewise negative.

Soltman³⁶ notes a case of Landry's paralysis in an eleven-year-old girl, where recovery occurred following treatment by inunctions.

Stockton³⁷ reports the case of a girl aged 27 (diagnosed acute ascending myelitis), where, following premonitory symptoms consisting of nervousness, insomnia and vague pains, which had existed two weeks, pain in the back and abdomen and anesthesia in the gluteal region developed. Control over the bladder and bowels was lost. Paresthesia in the feet developed along with weakness in the legs which, two days later, were completely paralyzed and anesthetic. The next day the arms were almost completely paralyzed and sensation in the upper part of the body was much impaired. Some movement in the legs now returned. The knee-jerks were absent. The neck muscles became involved and the patient died, being conscious to the end. No autopsy was held. Hematoporphyrinuria was a persistent symptom, although only very little trional had been given.

Maxwell³⁸ records the case of a Chinese woman in which the paralysis was of an ascending type, involving the bulb, and which ran a fatal course in 12 days. Paresthesia in the feet and pains in the legs preceded the motor involvement. The knee-jerks were absent and the urine passed involuntarily. Just before this attack the patient had suffered from diarrhea produced by eating unripe fruit.

In a case examined post-mortem by Wappenschmidt³⁹, the peripheral nerves were found to be normal. The anterior horns and Clarke's columns showed degeneration of increasing intensity from below upwards. Dydynski⁴⁰, on the other hand, holds that Landry's paralysis is a peripheral nerve disease and ascends because it attacks the least vital parts first, these being least resistant to toxic influences. To support his view he points to the effects of curare poisoning upon animals.

Baumstark⁴¹ reports the case of a young man (which he regards as one of ascending acute myelitis) who had contracted malaria in Africa. He suddenly developed weakness in the legs which rapidly increased to complete paralysis. Motor weakness ascended; marked bulbar symptoms appeared. Muscular atrophy, absent knee-jerks, pains along the nerve trunks, produced by pressure, disturbance of sensation, paralysis of the bladder, impaired vision, and peculiar choreiform movements

of the hands were among the symptoms noted. The symptoms all gradually disappeared and recovery occurred. This case is of peculiar interest in that malaria seems to have been the cause, and because of the recovery after such a profound involvement of the nervous system.

At this point I shall introduce the clinical histories of three cases I have observed:

Case I is that of a single man aged twenty-one years, a telegraph operator, of excellent habits. He has never used tobacco or alcohol and denies syphilitic infection. The sisters died of phthisis; otherwise his family history is good. The patient himself had an attack of typhoid fever at the age of 14. Since then, up to the time of his present illness, he has enjoyed excellent health.

Four weeks ago, while telegraphing, he lost some control of his finger-movements in operating his instrument so that he became clumsy and awkward. He thought of writer's cramp. Four or five days later he became weak in the legs so that his knees often gave away in walking. At the same time his thighs and legs, especially the latter, felt numb. A week later the same numbness appeared in his arms, hands, and abdomen. He felt as though a band were about his waist. He now saw double at times—always when looking to the right or left or downwards. He also became dizzy on sudden movement. There had been no pain or fever at any time.

Examination on January 31, 1902. Stripped, he exhibits no atrophy. His gait is slow, labored, one of weakness. The grasp of the hands is feeble. There is no objective disorder of sensation; but he complains of paresthesia in arms, legs and abdomen. There is no pain upon pressure over the nerve trunks. The knee-jerks and Achilles jerks are absent. The abdominal reflex and wrist-jerk are present. The electrical reactions of the muscles of the arms and legs are normal. Eyes: The pupils are 3 mm wide, equal, and respond promptly to light and in accommodation. The eye-grounds are normal. In conjugate movements there is some muscular deficiency noticeable especially in movement to the right. No squint is apparent. The urine is normal.

He was observed only once; but a month later he was seen walking on the street. His sister stated that he took great aversion to some mutton he ate two weeks before the appearance of the first symptoms; said it was tainted and had spoken much about it.

Case II.—A perfectly healthy boy, aged 7½ years, went to

bed in his usual health. The next morning he complained of soreness in his legs and thighs. But little attention was paid his ailment and he attended school as usual. The pains or soreness continued; and three days later appeared in the arms and shoulders. At the same time it was noted that he had difficulty in walking. He was unable to return from school and had to be carried home. Very soon afterwards loss of power appeared in the arms; and three days after the onset of the paralysis he was unable to stand alone and his hand-grasp had become almost nil. He had insufficient strength to shut a door, but was still able to grasp a pencil firmly enough to write his name. He could not move his toes. His condition remained thus for about one week and he then began to improve and has steadily continued to do so ever since. There was no fever at any time; no mental, bulbar or sphincter symptoms. The pains complained of were never severe. He spoke rather of soreness and never cried because of it.

Examination, April 22, 1902 (five weeks after the onset of the trouble). The boy has a waddling, non-spastic gait. The grasp of the hands show about one-half the normal strength. There is no apparent wasting of the muscles (father notes none). The calf and thigh muscles are firm; but the arm and shoulder muscles are flaccid, soft and exhibit R. D. The leg and thigh muscles exhibit partial R. D. Sensation is unimpaired. The knee-jerks are present although somewhat sluggish. On deep pressure there is moderate tenderness in the arms and legs. The boy is quite bright mentally. Since the examination the boy has steadily improved, but is not yet well.

Case III.—A single man, aged twenty-five years, born in Ireland, a laborer. Family history negative. The patient had always been a hard worker and enjoyed good health.

The latter part of October, 1901, three weeks after coitus, a single, hard, non-painful sore appeared on the head of the penis. Following this he had a sore throat which lasted seven weeks. He also noted swelling of the glands in the groin. No skin eruption appeared. About the middle of November (three weeks after the appearance of the chancre), he was seized with severe pains in the legs; and 24 hours later with pains in the lower part of the back; and 48 hours later, with pains in the arms. These pains have persisted, night and day ever since. He had no pains in the trunk or head at any time. The pains have been more severe and more persistent in the legs than in the arms. He describes them as "steady," "sharp," "burning" pains. They do not leave or return suddenly, but are more or less constant, but always worse in the mornings. Along with the pains, he complained of tire, weariness, loss of strength.

From the time of the onset of his symptoms up to the date of his admission to the Mercy Hospital, January 23, a period of about nine weeks, he lost 23 pounds in weight. The pains have kept him awake much at night.

Examination, February 1.—There is general emaciation. A dusky reddish color of the skin over the arms and legs is noted. The pallor produced by finger pressure disappears very slowly. Fibrillary twitchings in the face, arms and legs are present. The twitchings are most marked in the face about the mouth and chin. Mentally the patient is quite clear, but gloomy as to the outcome of his trouble. The grasp of his hands is pretty fair, but probably much below what is normal for him. The legs exhibit as much or rather more weakness than the arms; but he can still stand for a short time on one foot alone. There is no swelling or pain about any of his joints. Deep pressure over the great nerve trunks produces no pain. There are no cranial nerve palsies. The pupils are equal (3 mm) and react promptly to light. There is no diplopia. The tongue is clean. Both knee-jerks are very quick, but make a rather limited excursion.

There is general glandular enlargement, the epitroclear, inguinal, and post-cervical glands being clearly palpable. A careful examination of the thoracic and abdominal organs by Dr. Johnson was negative. The pulse is rapid (100). There is no fever; and there has been none since he entered the hospital. A blood examination revealed the following: White cells, 10,720; red cells, 5,100,000; hemoglobin, 85 per cent. The patient has, at all times, had control over his bladder and bowels.

March 3.—The pains are considerably less in severity but still quite troublesome. He is more emaciated than he was a month ago. The bony points about the pelvis have become very prominent; and there are two or three small shallow bed-sores over the sacrum. He walks in a feeble, laborious fashion with his legs partially flexed. The knee-jerks are now practically absent, the right responding but faintly. Achilles jerks are also absent. Deep pressure over the nerve-trunks and passive joint movements elicit no pain. The fibrillary twitchings especially in the legs are more marked than at the previous examination. [He had been walking about the ward just before I came and states that this always increases the twitchings in his legs.] On several occasions during the past month he has been unable to empty his bladder.

By way of treatment he received iodide of potassium, hydrotherapy, and remedies for the relief of pain and to promote diuresis.

All three of these cases are atypical and I dare say there are those who would hesitate or decline to classify them as Landry's paralysis, and yet all of them, I believe, exhibit a sufficient number of the marks of that affection to be so designated. Moreover, the clinical pictures which they present could not well be labeled by the name of any other disease.

These three cases are alike in that they all exhibited a rapidly ascending motor paralysis without elevation of temperature or mental symptoms. In all of them sensory symptoms were present, which in two of the cases preceded the motor symptoms; none had a fatal issue.

Case I is noteworthy inasmuch as the course of the affection was comparatively mild, the patient probably never having been off his feet.

The second case must, I think, be admitted to be a fairly typical one. Here, after three days of soreness in the legs and thighs loss of muscular power suddenly developed in these members, followed very shortly by similar involvement of the arms. This rapidly developed until it became almost complete; remained thus stationary for a week and then rapidly improved. Two interesting features of this case are the preservation of the knee-jerks, although diminished, and the presence of complete and partial reactions of degeneration in the affected muscles five weeks after the onset of the trouble. In neither of these cases was the cause of the disease clear.

The third case, on the other hand, is striking in that it seems almost certain that syphilis was the etiologic factor to which the disease was chargeable. In this case the sensory symptoms at first overshadowed the motor, making it seem like an ascending sensory rather than ascending motor disease. But along with the sensory involvement there were also motor symptoms, although in the background at first. It is to be especially noted that the involvement was rapid and ascending in type. Other points of interest in the case are the great and progressive muscular wasting; marked fibrillary twitchings involving the entire body, including the face; the, at first, exaggerated and afterwards absent knee-jerks; the vaso-motor disturbances; the slight involvement of the

sphincters; absence of fever; apparent absence of blood-changes; absence of mental symptoms; absence of bulbar involvement; the preservation of sufficient strength to walk and give a fairly firm hand-grasp; the absence of pain on pressure; the long and chronic course of the disease.

In one of the cases described by Landry there was a history of syphilis; and the possibility of syphilis as an etiological factor is considered by him. Nonne⁴² believes that it is improbable that syphilis can produce the symptom-complex of Landry's paralysis and leave behind no anatomical changes. Kussmaul, Heubner, Zambaco, Gros and Lancereaux⁴³ describe cases where the Landry symptom-complex developed during the early stages of syphilis without prodromal symptoms or signs of meningitis. Alexander⁴⁴ mentions a case with syphilitic history, where, following ocular palsy and optic atrophy, Landry's paralysis developed and terminated in death.

All these cases were reported years ago; and Nonne⁴⁵ observes that in recent literature the views of Heubner as to the existence of a syphilitic form of Landry's paralysis are not confirmed, although he admits that here and there a case may be found with a syphilitic history, as, for example, Goebel's⁴⁶, he holds the reverse is the rule. Nonne's contention on this point, may, I think, be allowed, and yet it seems to me that it must be admitted that occasionally syphilis is the etiological factor. In no case I have been able to find does this seem so clear as in the third case I have recorded in this paper. Fr. Schultze, however, reports a fatal case of acute ascending atrophic paralysis⁴⁷ with bulbar symptoms in which the onset occurred five months after a syphilitic infection. Schultze himself does not insist that syphilis was the etiologic factor, although other factors were not apparent.

Brissaud⁴⁸ records the case of a man aged thirty-three who, following violent pains in the lumbar region, was seized with a rapidly ascending motor paralysis, marked bulbar symptoms and loss of control of the sphincters. Sensation was unaltered. Atrophy did not appear. The knee-jerks were lost but afterwards reappeared. The electric reactions were normal. Slight fever was present. The patient made a rapid recovery.

A case reported by Vizioli⁴⁹ most of all resembles my third case. A man aged 65 was infected with syphilis at the age of 21, but not thoroughly treated. The disease began with severe pains followed by motor weakness, first in one hand but afterwards involving the entire musculature, accompanied by pains and fibrillary twitchings and followed by progressive atrophy. Reactions of degeneration were present. The symptoms differed from those seen in the Duchenne-Aran muscular atrophy in that pain was a prominent symptom and that paralysis preceded atrophy.

Nonne⁵⁰ reports two cases of progressive anterior poliomyelitis of a descending type. In both the sphincter function was disturbed and paresthesia was present, points which convinced him that the morbid process was not confined to the anterior gray horns. In both cases the disease was arrested after much atrophy had occurred, following a vigorous anti-syphilitic treatment. In both cases obvious signs of syphilis were present.

Summing up now the evidence afforded by this review of the literature and the study of my own cases, it seems that in the symptomatology of Landry's paralysis sensory symptoms are almost constantly present and generally precede the motor paralysis by several hours or a day, occasionally by much longer periods. The most common sensory disturbance is paresthesia, but hyperesthesia, tenderness and spontaneous pain, which may be severe, are not rare. The motor paralysis is usually of an ascending type, but may be of the descending variety or begin in all four extremities simultaneously. As a rule muscular wasting does not occur and electrical reactions of degeneration are absent, but well-marked exceptions to this rule occur. In a few cases fibrillary twitchings are recorded. The sphincters are involved in about one-third of the cases. The four most constant marks of the disease are rapidly ascending motor paralysis, lost knee-jerks, absence of marked fever and preservation of the mental integrity; but occasional exceptions occur. Oppenheim⁵¹ observes that cases corresponding to the original Landry type are easily separated from other clinical types, but that the only absolute criterion for all cases is a flaccid paralysis

affecting in rapid succession the muscles from below upwards or rarely, from above downwards.

But considering the actual clinical records of reported cases, admitting the atypical and "transitional forms," it would seem that we have in Landry's paralysis a symptomatology which stands midway between multiple neuritis on the one hand and poliomyelitis with bulbar paralysis on the other hand, and which at both extremes of its types touches and indeed overlaps the clinical picture of these two affections. Most of the cases of the disease are, however, clearly distinguishable from either multiple neuritis or poliomyelitis. Moreover, the morbid anatomy of Landry's paralysis, like the clinical picture, reveals features common to both multiple neuritis and poliomyelitis; but it reveals changes not common to either, and in some cases carefully examined by the later histologic methods no morbid changes were found.

The various writers on Landry's paralysis are almost a unit in saying that it is due to an infection or toxemia; and this view seems to be founded upon three facts chiefly: (1) the acute onset and rapid course; (2) the presence of bacteria found in a certain number of cases examined post-mortem; (3) the frequent enlargement of the spleen and lymph glands.

In the earlier reported cases collected by Bailey and Ewing a considerable number showed no post-mortem changes. But in the later reports of autopsies examined by the means of the present day exact histologic technique morbid changes of greater or less extent have been pretty generally recorded. Bacteriologic findings have not been so frequent as histologic changes. In some cases the pathologic changes recorded have been so slight as to scarcely afford a reasonable explanation of the symptoms. Oppenheim⁸⁸ gives the prudent caution that the finer the technique, the greater should be our caution in accepting the findings revealed by it. But even when examined by the most approved modern methods by competent investigators there are a certain number of cases in which the post-mortem and bacteriologic findings were negative. In a carefully examined case reported by Girardeau and Levi⁸⁴ and A. Schultze⁸⁵ in 1898 and Kapper⁸⁶ in 1900, the post-mor-

tem findings were negative; and in the carefully reported case by Goebel⁵⁷ the peripheral nerves, spinal gray matter, anterior and posterior nerve roots were normal; only a light grade of degeneration of pyramidal tracts high up was discovered, insufficient, in the opinion of the writer, to account for the symptoms.

The various post-mortem findings recorded need not at this time be rehearsed since they have been sufficiently analyzed by recent writers. Suffice it to say that they have been most manifold both in degree, situation and kind. Disseminated inflammatory areas in the bulb were found by Ormerod, Boinet, Courmont, while others (Eisenlohr, Schultz, Ketli, Halva and Immerman) have found similar changes in the cord. A great many cases are recorded in which the changes were in the anterior horns of the cord. (Bickel, Taylor and Clark, Worcester, Hirtz and Lesne, Wappenschmidt.) In many others they were in the peripheral nerves (Barth, Dejerine, Bois, Dydyński, Eisenlohr); while in a still larger number both the anterior horns and the peripheral nerves were involved (Centanni, Eisenlohr, Pribykow, Thomas, Knapp and Thomas, Boinet, Mills and Spiller, Krewer, Schultz). In Goebel's case some fresh degeneration of the muscles was detected, although the peripheral nerves and the gray matter of the cord were normal. In a few cases (Diller and Meyer, Goebel, Bickel), changes were found in the white matter of the cord.

A most interesting seat of morbid changes, in view of the constant presence of sensory symptoms, is the posterior nerve roots. Changes in these structures are recorded by Knapp and Thomas, and Boinet. In view of the prominence of sensory symptoms in Landry's paralysis it is much to be regretted that there are very few records of examination of the posterior spinal nerve ganglia. Finally the frequent records of enlargement of the spleen and lymphatic glands and pulmonary hemorrhages must be borne in mind.

The nature of the morbid changes are manifold, representing many forms and degrees of degeneration, extravasation, hemorrhage and inflammation.

While bacteriologic examinations have not so frequently as

histologic examinations yielded positive results, still there are now on record a considerable number of cases in which micro-organisms have been found post-mortem. The streptococcus, a diplococcus and staphylococcus have been found in the central nervous system. Piccinno found bacteria in the perivascular lymph spaces; Courmont and Bonne a diplococcus in the cerebro-spinal fluid. Remlinger⁵⁹ produced acute ascending paralysis in rabbits by injections of the streptococcus and recovered the organisms from the cord.

The etiology is one of the least studied, least understood, and at the same time most important phases of the subject. Bailey and Ewing mention as etiologic factors typhoid fever, syphilis, diphtheria, exposure and over-exertion; while in the great majority of cases analyzed by them (26), there was no definite infection. Various authors state that the disease has followed pneumonia, whooping-cough, small-pox, influenza and septicemia. In several cases alcohol was thought to have been the cause. Oppenheim⁵⁸ mentions one case in which the disease followed the kick of a horse who was affected by septicemia. In no case does the etiology seem quite so clear as in one of my own cases recorded in this paper where the disease began a few weeks after the patient had contracted a chancre. In Baumstark's⁶⁰ cases malaria was the apparent cause.

There are three views regarding Landry's paralysis at which it may be worth while to glance.

One set of observers have regarded it as nothing more than a form of multiple neuritis. (Dejerine, Barth, Ross, Putnam, Walton, Dydynski, Krewer.) These observers point to the frequently reported changes in the peripheral nerves, and explain the changes occurring in the spinal gray matter on the theory that these are merely parts of the same trophic and anatomic unit, and liken them to the changes which occur in typical multiple neuritis. Against this view may be urged the inconstancy of these morbid changes, the rather frequent cases in which the peripheral nerves exhibited no changes, the fact that the peripheral nerve changes found consist usually of degeneration, seldom of inflammation; and finally that the clinical course of the disease differs considerably from that of true multiple neuritis.

Bernhardt and Westphal concluded that Landry's paralysis is very like acute poliomyelitis, differing from it chiefly because it is more generalized over the gray matter of the cord. Bailey and Ewing include six cases of so-called poliomyelitis in their list of analyzed cases, because of the wide extent of involvement and the presence of bulbar involvement. This view does not sufficiently account for the ascending character of the disease or the frequent sensory symptoms. Cases followed by complete recovery also afford an argument against it.

The third and most recent view of Landry's paralysis, is that supported by Thomas and Knapp, and Thomas, and Mills and Spiller: that it is primarily an affection of the motor neurone of the first order, a parenchymatous degeneration of toxic or infectious origin. There is much to support this view of the morbid anatomy of the disease in the consideration that the most constant pathologic changes are those found in the anterior horns of the cord, and that such a theory offers a reasonable explanation of the clinical symptoms recorded in many of the cases. But arguing against this view is the post-mortem record made by Knapp and Thomas themselves, of degeneration in the posterior nerve roots, a similar record made by Boinet, the case of Schwab where the only change was great vascular congestion, the cord and peripheral nerves being normal, and the cases with negative post-mortem findings.

To these three views might be added the view maintained by Taylor and Clark⁶⁰ and supported by Schwab, that there is no such "disease" as Landry's paralysis; that the cases described as such exhibit "no essential constancy in the clinical symptoms nor in the pathologic findings, and the etiology is wholly vague."

While it is quite true that the symptomatology, morbid anatomy and etiology of Landry's paralysis are inconstant and variable, and that it is not a disease in the sense in which tetanus or small-pox or exophthalmic goiter are diseases, it is at least as much of a "disease" as some other so-called "diseases," *e.g.*, cerebral palsy of childhood.

The term Landry's paralysis cannot be dropped. It has been used too long to be erased from our nomenclature. Nor

is it, in my opinion, desirable that it should be dropped; but it is most desirable that the older conception of its meaning be enlarged to include this highly striking group of cases, variable though they be, standing both in symptomatology and pathology midway between multiple neuritis and poliomyelitis, and which cannot be placed under either of these headings. It must be borne in mind that these cases exist, and if the name of Landry's paralysis were discarded a name would have to be invented under which to include them. No harm can come of the continued use of the term Landry's paralysis if the variability in the etiology, symptomatology and morbid changes and bacteriologic findings be borne in mind, and if we at the same time freely admit the contention of Taylor and Clark, that in the strict sense of the word it is not a "disease" but rather a group of symptoms, overlapping each other more or less, and which are toxic infections in origin, produced by a great variety of poisonous agents.

The accumulated evidence points very strongly to the toxic origin of Landry's paralysis; and with equal certainty it indicates that it is produced by no one single agent but by many. Multiple neuritis may be here briefly glanced at. This disease is produced by traumata, toxic agents, and slow degeneration changes. Among the toxic agents may be mentioned lead, arsenic, copper, carbon monoxid, the toxins of diphtheria, influenza, malaria, typhoid fever, rheumatism, etc. The symptomatology of multiple neuritis varies greatly, depending upon the nature and potency of the toxic agent, and the resistance or vulnerability of the tissues. The poisons of lead and diphtheria possess peculiar selective action. Similarly the symptomatology of cerebro-spinal meningitis varies enormously; and the disease is doubtless susceptible of being produced by several varieties of toxins, perhaps by many. Putnam⁶¹ has well said: "When the nervous system is working in a perfectly normal manner and not under strain it seems physiologically a unit. When the reverse is true it becomes evident it is comprised of many parts of varying powers of resistance to disease."

For a definition of Landry's paralysis I would suggest the

following: Landry's paralysis is an infection or toxemia produced by various poisons in which the spinal cord (including the bulb) and the peripheral nerves, and especially the lower motor neurone, are attacked, and in which parenchymatous degeneration, hemorrhagic and inflammatory exudates of various kinds and degree, are usually found post-mortem in this portion of the nervous system. But in a few cases no post-mortem changes are discoverable, and in still others changes which are inadequate to explain the symptoms. The spleen and lymph glands are usually enlarged. Bacteria of various kinds have, in a considerable number of cases, been found in the central nervous system; but in the great majority of cases a careful examination has failed to discover any microorganisms. The male sex is affected much more commonly than the female. No age is exempt.

The first symptom of the disease is usually paresthesia, sometimes accompanied by pain in the members which are subsequently paralyzed, and this may exist from a few hours to several days or even longer as a premonitory symptom. General malaise, neurasthenic symptoms and ataxic movements may also be premonitory symptoms. Widespread flaccid paralysis rapidly develops involving legs, trunk and arms, and, in fatal cases, the muscles innervated from the bulb. The paralysis is usually of an ascending type involving the legs first, but it is occasionally of a descending type and may involve all extremities simultaneously or attack the various muscles in an irregular order. In the majority of cases the sphincters are intact. Their involvement however is not rare. The knee-jerks are absent. As a rule atrophy, fibrillary twitchings and electrical changes in the muscles are absent; but any or all of these phenomena may be present. Pain and tenderness to pressure may be prominent symptoms, but as a rule are not very marked, although they are present in some degree in the majority of cases. As a rule the temperature is normal or but slightly elevated. Consciousness is almost invariably preserved unimpaired throughout the attack.

Cases which terminate fatally run a course of from a few days to one or two weeks, and almost always exhibit bulbar

symptoms. In cases which do not terminate fatally the course may extend over many weeks or even months, and recovery may be incomplete. Often premonitory symptoms exist for several days or even weeks.

While the prognosis is grave, a considerable number of cases terminate in recovery or partial recovery.

The treatment should be directed to the accomplishment of two ends: the support and stimulation of the vitality and the production of elimination. To this end hypodermic injections of strychnia and the use of whiskey, digitalis, mild diuretics and cathartics are to be recommended. Anodynes may be required when pain is severe. In cases in which syphilis has been recently contracted, vigorous specific treatment should at once be instituted. Later, after a turn for the better has occurred, massage, electricity and hydrotherapy may aid the tendency to recovery.

Note.—Since the above was written an important article on "Poliomyelitis in the Adult," by Dr. E. W. Taylor, has appeared in the August (1902) number of this journal, in which the clinical histories of six cases are given. In Taylor's first case in which the clinical manifestations pretty closely corresponded to the Landry symptom-complex, a careful post-mortem examination showed evidence of primary inflammation of the ventral horns of the cord, and secondary destruction of the nerve cells, and marked degeneration of the peripheral nerves.

Taylor reiterates his objection to the term Landry's paralysis and observes that "Poliomyelitis is none the less poliomyelitis because it simulates in its clinical course what Landry, many years ago, described as acute ascending spinal paralysis." This contention may be readily allowed. But all cases of so-called Landry's paralysis can not be shown to be cases of poliomyelitis; many more closely correspond to multiple neuritis. I can see in Taylor's argument no reason for changing the views I have expressed in this paper.

I would suggest that the term Landry's paralysis be employed precisely as most neurologists employ the term apoplexy. Under this term is included both cerebral embolism and hemorrhage, and also those rarer and more or less obscure conditions

which may produce apoplectic symptoms. When we feel sure that an apoplexy is hemorrhagic in character, we speak of cerebral hemorrhage; but since we see many cases in which the differential diagnosis between cerebral hemorrhage and embolism is uncertain, the more general term apoplexy becomes convenient.

Similarly the term Landry's paralysis may be conveniently retained to designate cases of a certain clinical type, some of which can be made out to be cases of poliomyelitis, others of multiple neuritis. But the term, like apoplexy, is especially useful to designate those cases which cannot be made out to be either cases of multiple neuritis or poliomyelitis and those cases in which the post-mortem findings are negative.

With advancing knowledge the terms apoplexy and Landry's paralysis may be discarded, but that day is not yet.

²Amer. Jour. Med. Sc., August, 1898.

³JR. NERV. AND MENT. DIS., 1898, p. 369.

⁴Amer. Jr. Med. Sc., April, 1896.

⁵N. Y. Med. Jr., July 4-11, 1896.

⁶JR. NERV. AND MENT. DIS., June, 1898.

⁷Amer. Jr. Med. Sc., Aug., 1898.

⁸JR. NERV. AND MENT. DIS., Feb., 1900.

⁹*Ibid.*, April, 1900.

¹⁰"Leçons sur les maladies du système nerveux," Deuxieme Serie.

¹¹"Lehrbuch der Nervenkrankheiten," Zweite Auflage p. 397, et seq.

¹²JR. NERV. AND MENT. DIS., Dec., 1900.

¹³*Op. Cit.* p. 192.

¹⁴*Op. Cit.*

¹⁵"Semiologie du système nerveux," p. 559.

¹⁶"Vorlesungen über die path. Anat. des Rückenmarks," 1901, p. 295.

¹⁷Neurolog. Centralblatt, April 1, 1898.

¹⁸*Op. Cit.*

¹⁹*Op. Cit.*

²⁰Quoted by Knapp and Thomas, *op. cit.*

²¹Med. Rec. Vol. XLVII., p. 534.

²²*Op. Cit.*

²³JR. NERV. AND MENT. DIS., May, 1898.

²⁴Bull et Mémoires de la Société Méd. des Hôpitaux de Paris, 1895, p. 659.

²⁵La Presse Médicale, 5, 1897, p. 269.

²⁶Abstracted in JR. NERV. AND MENT. DIS., Vol. 26, p. 239.

²⁷Bull. et Mémoires de la Société Méd. des Hôpitaux de Paris, 1895,

p. 63.

²⁸Brit. Med. Jr. I, 1898, p. 1,654.

²⁹JR. NERV. AND MENT. DIS., 1901.

³⁰Obozrenjepish, 1899, No. 2, p. 151 (Abstracted in JR. NERV. AND MENT. DIS.).

³¹Brit. Med. Jr., May 4, 1901.

- ²²Jr. NERV. AND MENT. DIS., Dec., 1900.
- ²³Deutsche Zeitschr. f. Nervenhk. Bd. 16, H 3-4, p. 305.
- ²⁴Lancet, 1900, Vol. II., p. 1490.
- ²⁵Wiener klin. Wochenschr., 1900, No. 1.
- ²⁶Jahr. f. Kinderhk. Bd. 51, H. I., p. 67.
- ²⁷Amer. Jr. Med. Sc. Vol. 120, p. 36.
- ²⁸St. Bartholomew Hospital reports. Vol. 36, 1900, p. 137.
- ²⁹Inaug. Dissert. München.
- ³⁰Jahresbericht über Neurolog. Psych. 1900, p. 406.
- ³¹Berlin klin. Woch. 1900, No. 37 and 38.
- ³²"Syphilis und Nervensystem," p. 297.
- ³³Quoted by Nonne. *Op. Cit.*
- ³⁴"Syphilis und Auge." Wiesbaden, 1889. Quoted by Nonne.
- ³⁵*Op. Cit.*
- ³⁶*Op. Cit.*
- ³⁷Berlin klin. Wochenschr., 1883. No. 39. Quoted by Nonne.
- ³⁸Rev. Neurologique. Apr. 30, 1902, p. 355.
- ³⁹Ann. di. nevrol. Abstracted in Neurolog. Centralbl., 1900, p. 79.
- ⁴⁰*Op. Cit.*
- ⁴¹"Lehrbuch der Nervenkrankheiten," p. 401.
- ⁴²"Lehrbuch der Nervenkrankheiten," p. 400.
- ⁴³Rev. Neurologique, Oct. 1898.
- ⁴⁴*Op. Cit.*
- ⁴⁵Wien. klin. Wochenschr. 1900, No. 7.
- ⁴⁶*Op. Cit.*
- ⁴⁷La Semaine Méd., July 15, 1897.
- ⁴⁸*Op. Cit.*
- ⁴⁹Berl. klin. Woch., 1900. No. 37 and 38.
- ⁵⁰*Op. Cit.*
- ⁵¹*Op. Cit.*, p. 230.

NOTE ON CELL CHANGES IN A CASE OF COMPLETE COMPRESSION OF THE CORD.¹

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The mode of connection between neurones, whether motor or sensory, is still one of the unsettled questions of the finer anatomy of the nervous system. In intimate relation to this question is that of the effect of destruction of one neurone upon the nutrition and structure of those which are in connection with it. The case presented today seemed to me peculiarly fitted for the study of changes in the peripheral motor neurone when the axis cylinder of the central neurone has been completely destroyed, and this both because the destruction of the motor neurone of the second order was unusually complete, and also because of the long duration of the symptoms, for a period of thirteen years.

The case was presented to this Association at its meeting in Washington two years ago², and a brief résumé of the clinical features of the case will suffice.

The case was one of endothelioma of the dura. The patient, a single woman, at the age of twenty-one, in June, 1884, began to lose the use of the legs. In October she could still walk with assistance, but in April, 1885, she had no power in the legs, though the arms were unaffected. There was incontinence of urine at this time. In September, 1887, it was noted that there were violent, spasmodic and sudden contractions in the limbs. In November of that year there were noted flexor contractures in the legs. In August, 1892, it was noted in the records that there was no sensation in the legs, and no perception of pain. The cranial nerves were not affected, and although the pupils were

¹Read at the annual meeting of the American Neurological Association, June 5, 6 and 7, 1902.

²Thomas, J. J., "Two Cases of Tumor of the Spinal Cord." JOURNAL OF NERVOUS AND MENTAL DISEASE, November, 1900.

pretty constantly dilated they reacted to light and upon accommodating. The upper extremities were not affected, while the lower ones showed extreme contractures and were atrophied to a marked degree. The reflexes were not obtainable on account of the contractures. Sensibility in all forms was lost to a level on the trunk at about the mid-dorsal region. The function of the vesical and rectal sphincters was completely abolished. Decubitus was present. Exitus from exhaustion occurred on April 19, 1898. Autopsy by Dr. R. M. Pearce on April 19, 1898. The decubitus and contractures of the lower limbs were noted. In the mid-dorsal region of the vertebral column there was a projecting knuckle formed by the spinous processes of two vertebræ. Upon removing the cord there was found below the cervical enlargement and at the level of the spine of the scapula a granular, reddish swelling of the dura, about 2.5 cm. in length. This tumor appeared to be meningeal, but had almost completely replaced the cord. Below this point the cord appeared considerably atrophied. There was no lesion of the cord opposite the vertebral knuckle. Besides the conditions just spoken of, there was found diffuse nephritis, and cystitis. The microscopical examination of the tumor showed it to be an endothelioma of the dura, with the peculiar concentric rings seen in the tumors called psammomata. This tumor had produced what was practically a complete compression of the cord in the mid-dorsal region, the only axis cylinders which retained their myelin sheaths being a very few scattered ones at the periphery of the cord, and a few at the periphery in the posterior columns. There was a marked increase of the neuroglia in this part of the cord. Above the point of compression the cord showed marked degeneration of the median part of the posterior columns, and of the direct cerebellar tracts, and a more diffuse degeneration of the periphery of the cord throughout the lateral border and along the anterior fissure. Below the point of compression the cord was smaller than normal, and there was a well marked indentation just anterior to the point of exit of the posterior nerve roots. There was a very marked degeneration of the lateral and anterior pyramidal tracts, and a moderate diffuse degeneration at the periphery of the cord in its anterior and lateral

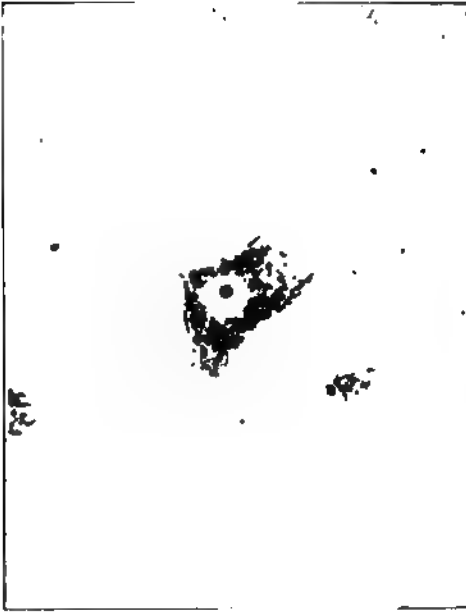


PLATE I



PLATE III.

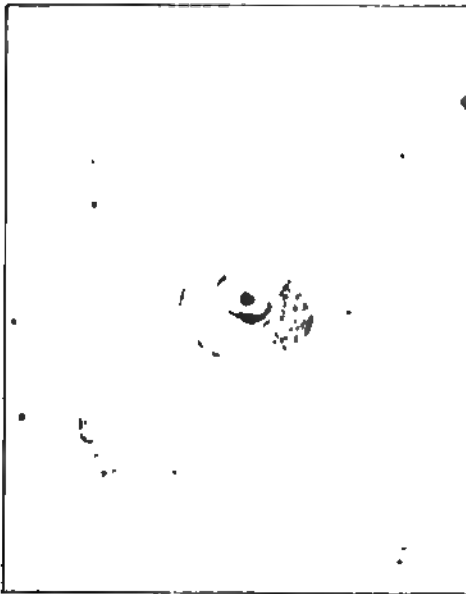


PLATE II.

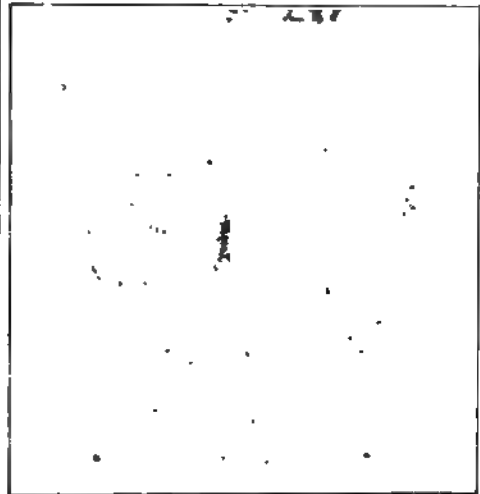


PLATE IV.

DESCRIPTION OF PLATES:

Plate 1—Cells from the ventral horn of the lumbar enlargement. Magnification about 250 diameters. Nissl's stain. Normal cell.

Plate 2—Do. Cell showing almost complete destruction of the chromophilic granules. Irregularity of nuclear membrane.

Plate 3—Do. Cell showing diffuse staining of the cytoplasm. Poorly staining nuclear membrane

Plate 4—Do. Cell with diffuse staining of the cytoplasm and advanced nuclear changes. Vacuolization of nucleolus.

parts, and a very slight diffuse degeneration throughout the anterior ground bundle. The degeneration at the periphery of the cord was no longer seen at the lower part of the thoracic cord, though the degeneration of the motor tracts, both lateral and anterior, was well marked here, as also that of the lateral pyramidal tract in the lumbar cord after the anterior tract had ended.

Since writing the previous report of this case a portion of the lumbar enlargement of the cord, which was hardened in formalin, was embedded in paraffine and stained with methylene blue by Nissl's method. The large motor cells of the ventral horn of the lumbar enlargement show occasional cells in which the chromophilic granules appear normal. These are irregular in shape, with distinct outlines, leaving the axonal hillock free, and they can be traced into the protoplasmic processes of the cell for fully the normal distance. The nucleus is clear and the nuclear membrane distinct. In some of the cells the nucleolus appears slightly swollen, and stains irregularly, and takes a slightly purplish tinge with the methylene blue stain. These normal cells are on the average two or three in each section of the cord. The remaining cells of the ventral horns show well marked changes. In most of them the granules at the periphery of the cell appear normal, and can be traced as usual well into the dendritic processes. The cell processes appear normal also. About the nucleus and filling the whole central part of the cell cytoplasm are very fine granules, in many cases so fine as to give merely a faint bluish tinge to the protoplasm about the nucleus. The axonal hillock can usually not be seen distinctly and seems to contain the same fine granular dust. The nuclear membrane is either very indistinct, or, as is more usually the case, the outline of this membrane is extremely irregular, so that in places it cannot be seen at all, and at other parts of the periphery there is a heaping up of chromatin substance which makes an irregular mass at one or two points of the border of the nucleus. The body of the nucleus is as a rule quite clear. The nucleolus is as a rule larger than normal, and generally vacuolated, and has a distinct purplish tinge. The nucleus, as a rule, occupies the normal position in

the center of the cell-body, but occasionally it is placed slightly excentrically, and in a good many instances the nucleolus is placed much nearer the periphery of the nucleus than is normally the case. In many of these cells is seen an area, sometimes a quarter or a third of the area of the cell, which is clear from granules or granular dust, and is of a yellowish color. This is apparently caused by an increase of the pigment granules of the cell, though the granules themselves are not distinctly seen even with a high power immersion lens. The few small nerve-cells at the base of the dorsal horn at this level of the cord appear practically normal.

We have in this case, to summarize, a tumor of the dura which produced a complete compression of the cord, resulting in a complete paraplegia with the formation of marked contractures and an entire loss of all forms of sensation, and loss of the control of the bladder and rectum, which condition lasted for thirteen years. There was a general smallness of the cord below the point of compression, and the usual systemic degeneration of the pyramidal tracts. The large motor cells of the ventral horn of gray matter in the lumbar enlargement were in a considerable number of cases found to show no changes in the chromatic substance as studied by Nissl's staining method. The larger number of these cells, on the other hand, showed well marked changes, consisting in a central chromatolysis, together with marked nuclear changes, as shown by the disappearance of the nuclear membrane and the heaping up of the chromatin substance at one point at the border of the nucleus, as well as by the slighter changes occasionally found where the nucleus took a diffuse stain with the methylene blue, or where there was swelling and irregular staining of the nucleolus.

It is difficult to imagine a case more suited than this to the elucidation of the question of possible changes in the peripheral neurone secondary to destruction of the cerebral neurone, the so-called reaction at a distance, both because of the long duration of the condition, and the completeness of the interruption of conduction through the cord of all impulses, as shown both by the symptoms during life, and by the results of the microscopical examination of the cord. The conclusions which seem

to be justified may appear somewhat contradictory, but they certainly seem to be that a central chromatolysis and nuclear changes of quite a severe grade may occur in nerve cells of the ventral horn when interruption of conduction from the brain of motor impulses has been cut off for a long time; and second, that in spite of this interruption of conduction from the central neurones the peripheral motor nerve cell may retain its normal cytoplasmic appearance for many years.

Perhaps the most obvious inference from these facts is that recovery from the symptoms produced by a compression of the cord from without, as from a tumor of the dura as in this case, is probably possible as far as the preservation of the peripheral neurones is concerned long after the entire loss of any hope of recovery of the central neurones after removal of the compression.

A CASE OF SEVERE HYSTERICAL CONTRACTURE OF THE LEG, AND ITS TREATMENT.¹

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The special object of this communication is to recount the difficulties encountered in the treatment of a serious hysterical contracture. I shall therefore be as brief as possible, only dwelling on various features of the case sufficiently to reveal the nature of it.

The contracture developed in the spring of 1900, the girl being then 13 years old. The following is the best account I could obtain of it: In January, 1900, she had a severe cold, attended with much aching in all portions of the body. After a few days she complained especially of the whole left lower extremity, and refused to put the heel to the floor in walking. Soon after her mother noticed that it was beginning to draw up, or contract. The physician then in charge tried to straighten it by bandaging it to a splint. This always aggravated matters. From the mother's description it is evident that the first jerking and hysterical attacks began in these attempts at bandaging the leg. The physician directed the mother to apply the splint daily. This became every day increasingly difficult. Finally one day, during the process, the heel flew up to the buttock with great force. The splint was hurled across the room by the force of the contraction; and the leg remained in this extreme flexed condition. The seance terminated in a full-fledged hysterical paroxysm. This occurred two months after the patient first began to complain of the leg. After this she had a protracted attack almost every night. The mother relates that for three months the nights were full of returning terrors to herself and the child on account of these attacks. She remained in bed about eight months. The jerking in the leg meantime began to gradually subside and the attacks became less severe and less frequent.

I first saw the patient March 19, 1901 (the contracture being then one year old). Her mother, from whom I obtained the major portion of the history, accompanied her to the city. The parents were becoming very anxious about the leg. After

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consulting the leading regular practitioners in their vicinity, they had employed various irregulars, including "osteopaths." From the latter especially they had hoped for much. But nothing had seemed to make any impression on the leg. Although

Hysterical contracture. (A similar contracture is figured in Oppenheim's "Diseases of the Nervous System," American edition, p. 680.)

the general condition had improved considerably, the mother was very confident that there had never been the slightest relaxation of the contracture during sleep or under any other circumstance.

Dr. Philip Hoffman, who kindly looked after the orthopedic side of the case, describes below the condition. His description and the accompanying photograph reveal at once the character and intensity of it. I may add a few words, however, to complete

the history. She was placed in a hospital and carefully taken care of and observed. The first and second nights after her arrival the nurses were called to her room to find her in a frightened state, as they called it, the condition being very similar to ordinary night-terrors in a child. The mother assured us that this was the slight remaining remnant of the former severe hysterical attacks, and that it came every night soon after falling to sleep, but that of late it soon passed and the patient usually rested the remainder of the night. A hypodermic injection of 1-100 gr. of hydrobromate of hyoscine was given at bed-time. After the first or second dose the spells disappeared and have not recurred since. The drug was soon discontinued and blank injections kept up nightly for some time.

In the hospital we soon found that the patient was a bright, intelligent girl. She had a pleasant disposition, and readily adapted herself to the new surroundings. She never made complaints, and seldom alluded to her disability in any way. When the limb was more rudely handled, her objections to the manipulations were usually manifested only by silent resistance and never by any great outcry. I soon found that she was very anxious to have the deformity corrected, but she did not seem very hopeful about it. She used one crutch, and got about with it in lively fashion. Her general condition improved rapidly, due less to the medicine and other therapeutic measures than to the fact that with the spring season she could be out in the air a great deal.

My physical examinations were made casually and in piecemeal manner, and kept free from suggestive features. I found it difficult to determine the sensory conditions of the skin in the various portions of the limb. The hyperesthesia and alertness of the muscles were so intense that during an examination a stimulus of almost any kind threw them on their guard. The consequent spasm was evidently very painful, producing a state of anxiety and mental confusion which could not be assuaged by any assurance, and which made the sensory tests always unsatisfactory. The thigh seemed always to be quite hyperesthetic to all kinds of stimuli up to two inches above the groin. The leg and foot were generally somewhat, but never totally anesthetic, and more so on the anterior aspect.

There was pronounced pharyngeal anesthesia and also narrowing of the visual fields. Both of these conditions were much relieved with her general improvement. Aside from those mentioned, no hyperesthetic, anesthetic, or hysterogenic regions were found.

She was given tonics and a careful hygienic regime, including brush and salt rubs, cold ablutions to the spine, electricity, etc. She was never hypnotized, but many milder suggestive meas-

ures were tried. Her general condition improved until she seemed to be in perfect health and spirits. There was no change, however, in the condition of the contracted member.

On the 7th of June (after she had been under observation for two and a half months) I introduced into the spinal theca a little over half a grain of tropa-cocain. I used the tropa-cocain, and only a small dose, instead of the hydrochlorate of cocain, because I wished to have the constitutional symptoms as slight as possible. There was some flushing of the face and fullness in the head which was hardly complained of, and lasted for half to three-quarters of an hour. The anesthesia was not complete, the result of the injection being quite disappointing. However, there was some relaxation of the muscles, so that the heel was separated from the buttocks three to four inches for several hours. When the effect of the cocain had passed the contracture was as rigid as ever.

The especial reason for using spinal anesthesia and at the same time producing as little general disturbance as possible, was the hope of a suggestive effect which might enable us to introduce some process of gradual extension. There was so little promise in the procedure, however, that before repeating it I determined to produce complete chloroform anesthesia and discover the condition of the tendons and ligaments of the knee joint. This was so much worse than what I had hoped to find that at this juncture I called Dr. Hoffman to my assistance. He agreed with me that it was better, all things considered, to forcibly extend the leg at once. In deciding upon this action instead of first trying some more gradual process of extension, we were influenced especially by the following considerations: First, the decided, hysterical resentment toward restraining apparatus, the use of which would be necessary in a gradual process; and to this was added the extreme muscular hyperesthesia, which in all probability would only be controlled by total anesthesia. Secondly, careful measurements showed that the leg was considerably shorter than its fellow. The girl was growing rapidly, the disparity in the length of the extremities probably just as rapidly assuming a more important proportion.

The following is Dr. Hoffman's account of the condition and of the operation which he performed for its relief:

"On examination, June 17, 1901, the right knee was found in a condition of such extreme flexion as to cause the heel to indent the buttock. The hamstrings, especially the inner, were in a condition of tonic spasm and somewhat tender on pressure. The power of voluntary extension was entirely absent. The contractions became more marked, and the patient complained of pain whenever the slightest attempt was made to passively ex-

tend the leg. The right lower extremity was atrophied. Measurements showed that the right tibia was twelve millimeters, and the right femur ten millimeters, shorter than the left; a total of twenty-two millimeters for the whole limb. The circumference of the right calf was forty-four millimeters, and of the right thigh, at its middle, forty-one millimeters less than that of the left. The right foot was nine millimeters shorter, and its circumference over the ball twelve millimeters, and over the heel six millimeters less than the left.

"On June 26, while the patient was under the influence of chloroform, it was found that with considerable force the limb could be straightened only sixty-five or seventy-five degrees, that is, to not quite a right angle. Accordingly, under aseptic precautions, all the hamstrings were subcutaneously and thoroughly divided about three centimeters above their insertions into the tibia and fibula. The limb could now be readily extended to well beyond a right angle, but great resistance was again encountered when the leg was brought to about sixty degrees from a straight line. This was apparently due to shortening of the posterior ligament. The skin was also very tense. To secure better leverage and to prevent the head of the tibia from slipping into the popliteal space, a genuclast was applied, and, after considerable effort, the limb was brought into a straight position. This left a gap of about twelve centimeters between the ends of the cut tendons. During the latter part of the operation the stretched skin tore and retracted, leaving a denuded surface about eight by five centimeters in area. The tear, fortunately, did not take place over the tendon wounds, but about five centimeters below. The wounds were dressed and the limb retained in the straight position by means of a plaster of Paris dressing extending from the toes to the perineum.

"In eight weeks the separated proximal and distal portions of the cut tendons had become firmly united by new material growing into the gaps. On September 26, there being no tendency of the hamstrings to again contract, the plaster of Paris splint was discarded and a light steel brace, allowing motion at the knee, applied. Four months after the operation the patient could walk with fair use of the hamstrings. A thick sole was attached to the shoe of the affected limb to compensate for the shortening of twenty-two millimeters, which, of course, was not lessened by the operation."

The patient left the hospital for home December 14, almost six months after the operation. At that time there was a complete reaction of degeneration in all the muscle groups of the leg and foot, and a total loss of sensation of all kinds below the knee. For two months she had been having almost daily an electric massage of the foot, leg and thigh with a strong gal-

vanic current. The temperature and color of the affected member were remarkably good considering the extent and degree of the paralysis.

The following is a letter received May 7. It conveys the latest account I have of the patient, and at the same time a good idea of her mental capacity (above that of the average girl of fifteen years).

"Dear Dr. Fry:—After this long silence I am writing you my troubles again. My foot is entirely well and I have been wearing my brace quite a while. I also take the electric treatment all the time. Since spring came I have felt so much stronger and better in every way until the last two weeks. My head aches almost constantly. Have indigestion and feel so bad when I first awaken in the morning. But after I'm up awhile it wears off to some extent. I believe I am somewhat run down, that is, my general health not as satisfactory as it might be. I've been almost living out of doors during this lovely weather, walking, driving and riding horseback, too, some.

"If you have any suggestions to make concerning my condition, would be glad to have you write me at an early date.

"Most sincerely, _____."

In explanation of her statement, "my foot is entirely well," etc., it may be interesting to note that soon after her return home the great toe of the lame foot was crushed, and at about the same time several large blebs appeared on other portions of the foot and leg. In correspondence with the patient and her mother they could not explain how these traumata were produced. The mother thought that the blisters might have come from the hot-water bag used to warm the foot, but she was not certain about it and seemed entirely mystified over the injury to the toe. I naturally suspected hysterical mutilation, and communicated my suspicion to the attending physician, Dr. S. Sanford; but he was unable to throw any additional light upon the matter. He stated, however, that on account of the bad trophic conditions the repair of the lesions was very slow, and that he was using an elastic bandage with evident advantage. As no more lesions have appeared my suspicions were probably unfounded.

At this writing I am unable to report exactly the condition of the leg and foot. I had expected to see the patient in April or May for an examination. I have had occasional communications from Dr. Sanford, the mother and the patient. They convey no information of importance beyond that contained in the little letter here given. Considering, however, the state of affairs when I last saw her, six months after the operation, it is not probable that the innervation will be greatly improved.

PSEUDO-EPILEPSIES, AND THE RELIEF OF SOME FORMS
BY THYROID.¹

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It may be well to indicate what is intended by the term pseudo-epilepsy. It is here used in a somewhat provisional sense, to specify a class of cases that can not as conveniently be brought under any other head.

We all know of the ordinary, the Jacksonian or symptomatic, reflex, senile, and such forms; but besides these we meet with occasional irregular cases which, while presenting features suggestive of the genuine type, yet do not prove to be definitely of that character. While these appear to represent a great variety, a careful study of them may simplify the matter and perhaps lead to useful conclusions. The individual case looks plain enough when worked out, but each is a problem at the start, and we need fuller sources of information.

The term epileptiform does not sufficiently distinguish them, nor does it really apply. That refers to the type of separate seizure, rather than to a more or less continuous condition, and, for that matter, some of these cases hardly show epileptiform seizures. Others terms, as *epilepsia larvata*, minor, *eclampsia infantum*, etc., are either insufficient or do not include the cases here intended. As it is not certain that they are cases of incipient epilepsy, that term is ruled out.

Another and practical reason for the designation pseudo-epilepsy, is that such cases come to us either already labeled epilepsy, or for us to determine whether they are true epilepsy or not. Quite in harmony with this is the fact that many of these cases are overlooked or ignored, with lasting damage, possibly, in consequence. If we simply speak of the rachitic or other form of trouble, it will fail to catch the ear of those who must first take the initiative. There is therefore practical as well as theoretic convenience in distinguishing such a class.

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The diagnosis of epilepsy is supposed to be easy, and in many cases it certainly is. Especially since the attention of the profession was directed by Seguin to the symptoms in incipient cases, there is a greater inclination to class all light and not well-defined forms under the main head. In this respect we may readily go too far.

I will give in detail a few cases in which the matter seems to be clear. All are from private practice. The cases to be cited have this in common; they can all be attributed to disturbance or abnormality of nutrition.

Case I—A girl of $5\frac{1}{2}$ years, seen November 7, 1901, with Dr. Childs. Father an Italian, and faints easily. Mother of German race, though born here. This is the oldest child, and of dark complexion, like the father.

The present trouble first appeared on a warm day in the summer of 1899, when she was about $3\frac{1}{4}$ years old. Soon after they began, *i.e.*, in the summer of 1899, she was 3 weeks in the country, and there was free of attacks. The summer of 1900 she was also free while at the seashore. In 1901 she was in the country from April 13, and remained free up to September 1, when she had one; and last winter even at home she was for some time free.

For the past two months, *i.e.*, since coming home, she has had one attack about every other week. Never has one while in bed, but only when on her feet. The attack may come at any time, morning, afternoon, or evening, on the street or in the house.

She acts about the same way in every attack. "Her face gets like a lobster," it is so red. She seems to get hot all over, and very soon begins to perspire generally (notably trunk, lips and nose). The first thing in an attack is that she shouts, "I'm dizzy." She says her "head goes round and round." The whole thing lasts not more than five minutes, and then she is fully over it. Lying down gives the quickest and most relief. Usually no twitching accompanies the attack, though there was some during a recent seizure. She understands when spoken to, even in an attack, and can control herself to answer. She gets up immediately after an attack and plays as usual. Never vomits after an attack. Excitement has no recognizable influence. The attacks are no severer nor in any way different now from those at first, only more frequent.

The above gives about all there is to say of the seizures themselves. But a number of details may be added regarding her condition in general. She has not as yet been to school.

Dislikes riding in a closed car, though not in an open one. Has been a bashful and socially backward child. At the same time, as the mother says, "she is very cute at getting on to things." No visual, ocular nor pupillary abnormality. Mitral and aortic sounds all clear. Pulse 98, regular and of fair force. She still has a little lisp, or persistence of "baby-talk;" says pin instead of spin, and seep for sleep. No nightmares nor nocturnal frights. Sleeps on her back with head low and mouth shut. Always a long sleeper, 11 hours or more. Has an exceptionally thick head of hair, two long braids. Does not tire easily. The throat looks healthy, and there is a fair pharyngeal reflex. She had pain for a little time in one ear last winter, but the drums now look normal. Somewhat stubborn and headstrong, but not more than other children. No difference in the attacks whether the stomach is full or empty. Inclines to constipation, but that is regulated when necessary. "Is quite a little meat-eater," says the mother. Is plump, but not specially stouter than formerly. No beading of ribs. Splenic dulness $7\frac{1}{2}$ cm. long. Never any chilliness or rigor, though she flushes readily in a warm room. Temperature, 99.1 deg. A record of her temperature showed a customary, though not invariable evening rise to 100 deg. She was put on small doses of quinine, and went a week without rise of temperature or attack. The quinine was then dropped, when she again showed irregular temperatures, at times as high as 103 deg., always late in the day. Quinine then failed to affect either the fever or attacks, it was stated. At any rate, the seizures were about one every two weeks in January. An examination of the blood at this time showed no malarial organisms.

A more careful hunt for sources of digestive trouble was next made. It was finally discovered that the child was in the habit of every now and then going to her uncle's meat-market and helping herself ravenously to raw meat. Her peculiar craving for this was noted above. It was easy to stop this practice. She has remained quite free from any disturbance the $4\frac{1}{2}$ months since.

Although the cause appears to have been found, there may still be question where to class this case. The frequent rise in temperature negatives any suspicion of reflex. The afternoon character of the febrile rise and the large spleen speak against simple attacks of indigestion. Anything characteristic of rickets was wanting. The case can, I think, most conveniently be put down as one of pseudo-epilepsy due to disturbed metabolism.

Case II—Dolly G., $3\frac{1}{2}$ years old, when first seen in July, 1900, at the request of Dr. McNaughton. She had been under

the care of another physician who considered her disease epilepsy, and had treated her therefor.

No instruments were used at the child's birth. It was a natural, easy delivery, though it was then noticed that she had a large head. The mother has had no miscarriage. There is one younger child, a healthy boy of 17 months. There was a decidedly neurotic heredity. The paternal grandfather took to gambling after middle life, and has since indulged in it whenever possessed of the means. The father is an asthmatic with nasal trouble. A sister of the father is an all-round neurotic of the extreme kind. While the mother is healthy, two half-cousins on that side have suffered from chorea, one long and very severely. In fact the heredity was so bad as to be considered strongly corroborative of epilepsy by one of the physicians who had seen her.

Dolly was a bottle-fed baby, on condensed milk. She nearly died of summer-complaint during the first two years. Otherwise always of constipated habit, with occasionally no movement for three days, but of late this has been regulated. Two years ago in the country, and again last summer, "she was almost one big sore, from mosquito bites and scratching them."

Otherwise she has always been a perfectly bright, healthy child up to two months ago. Her present trouble seemed to start from the time her first vaccination took. The disturbance is rather more at night. She twitches in sleep, rubs her legs together, and falls out of bed. At first this was so bad that convulsions were feared, but chloral and bromide have some control. She sleeps at first quietly up to midnight, but is restless after that. These peculiar nocturnal spells occur nightly if nothing is taken to stop them.

During the same period of two months she has also had so-called "peevish spells" by day. In these she harps on some one thing she happens to desire. Though not cross, she cries and keeps repeating the same thing—hysterical rather than cranky, the mother expresses it. The mother also states that she is "changed in talking," and has now become "childish." A considerable degree of dulness or stupidity is manifest. She is strikingly sober, and is said to have always been of a most serious temperament. Her voice and the questions that she asks are peculiarly infantile, and this is the more noticeable as she is large and stout for her age. She has a plump, wide face, and flattened-out, pug nose. The upper front teeth are gone, except the roots. The neck about the thyroid is small, and no definite gland can be made out. The skin is noticeably coarse and the features heavy. The head is large (over 50 cm.). This combination produces an effect immediately suggestive of myxe-

dema. It has always been noticed that she had an abnormally slender neck for so large a head. She takes after her father in general physique. He also has a large head with a small neck, wearing a $7\frac{3}{8}$ hat, but a $14\frac{1}{2}$ collar.

A number of other details may be added. The tongue is coated towards the root. Her breath in the night and before breakfast has been "bad" since her symptoms developed. Is largely a mouth-breather, like her father, though her mouth is closed part of the time in sleep. She is called full-blooded. She has a peculiar appetite, "literally living on bread-crusts, milk and cocoa," including pudding. Pupils equal, pulse 132 or more (standing). No helminthiasis. A slight cough the past week. Splenic dulness not large. Always a great perspirer. Is thought to be a little feverish at times. Temperature 99.7 deg. Is slightly knock-kneed, but no costal knobbing.

The next morning after I first saw her, an interesting phenomenon made its appearance. The dorsal surfaces of the basal phalanges began to be puffy, tender, red and glistening. There was a distinct induration of each of these when seen three days later. Something of the same appeared about the lids of the left eye. This peculiar condition of local swelling, however, soon cleared up. It was too early to be any reaction to treatment, and was more likely some manifestation secondary to her general condition.

She was immediately put on thyroid, and has been kept on moderate doses ever since, except for about a month that fall, when a recurrence of symptoms made a return to thyroid necessary. At first she received three-quarters of a grain daily in divided doses. This was gradually run up to a grain and a half daily. Recently a reduction of this amount has been instituted. Improvement became evident in a few days, and inside of a week the previously necessary dose of bromide and chloral was discontinued for good. Her complexion soon cleared up. The peevish turns by day and the attacks by night entirely disappeared. Her mind cleared up and became active and despite thyroid medication she has kept fairly plump, in fact, has gained some six pounds in the past year. She now laughs most of the time, and is as well, bright, rosy and natural as any child. Mosquito bites in plenty last summer failed to start any dermatitis.

This spring she had an attack of tonsillitis, and stood it well. Her old physician and the parents are more than satisfied with the result, even though some thyroid medication has to be continued. Her own thyroid gland is still small, though a diminutive right lobe with scant isthmus and a stump on the left, all very soft, can now be made out. It seems to be regaining its function.

She still perspires too freely. There is an inclination to bronchitis, and the tonsils are large. The pulse continues over-rapid, usually 120, and faster if affected by any of the inevitable ailments of childhood. At times a small amount of strophanthus has helped, and some care as to laxatives is necessary. Of course she gets a liberal diet; though the appetite is fickle, she is "very fond of meat." It might be queried whether these present deviations from the normal are not due to the thyroid administered. According to Ausset, children are very susceptible to this agent. But the dose is small even for a child, and the deviations are only such as the patient had shown before taking the thyroid. Either animal thyroid does not fully substitute the native article, or certain minor symptoms in this child are not thus to be remedied.

Treatment was in this case based at the start on the view that the girl inherited through the father an abnormally small thyroid, and that this had become inadequate soon after she reached her third year. At that time she certainly appeared to be developing signs of myxedema, but that it was not the simple form was shown by the tendency to perspiration and the elevation rather than depression of body-temperature. It at least was not that alone.

These same facts, with the history of early bowel trouble, the later constipation, the age of the patient, her peculiar diet, decayed teeth, sedate manner, recurring touches of bronchitis, and the slight bending of the lower extremities (knock-knees, indicating late rickets) all point to a degree of rachitis. And the failure of the thyroid to remedy certain manifestations harmonizes with this view.

Many myxedematous patients, on the other hand, suffer from rachitis or some similar disorder (claimed by Siegert not to be true rickets). Various published cases show that we are here in a field where all kinds of mixed forms occur. And one can not but be struck, on looking up the literature, with the probability that many such cases as this have been called cretinism, myxedema, etc. We might call this case rachitis associated with a degree of athyreosis (to adopt a term from Quincke). The good result of treatment remains the same, under whatever head the trouble is classed.

Case III—Thomas P., 3 1-3 years old. Referred by Dr. Aplegate, December 4, 1901. Father born in Brooklyn, mother in Minnesota, but of Irish race, boy in Montana. They moved here from the latter state in November, 1900. Since then the boy has been taking malt with hypophosphites, and improved for a time, but has recently retrograded. He has a brother of 5 years, and a sister older. The brother had convulsions when one year old, and again when three years old.

Tommy, the patient, was weaned when five months old. When but three days old he had a hemorrhage from the bowels, in which the blood streamed out for sixteen hours. During his life in the West, ever since he was small, up to the time of coming here, he had 16 to 18 watery, foul-smelling bowel-movements a day. Between the ages of one and three years he several times was threatened with convulsions, but they were warded off by the doctor. There was no thought of any serious trouble with him, however, up to last spring. At that time, in April, 1901, he had his first general convulsion. He has had four well developed ones since the last one five months ago. There were two partial ones only a week since, before getting up one morning. All of these came without warning. Besides these he has a lighter form, which may recur a dozen or twenty times a day. In them his head is drawn down on the breast, the eyes roll upward, and either his hands double under, or his arms go upwards. He will grasp at anything and try to work it off. Strikes his head "when it is over with" (head-knocking is recognized as a not unusual thing in rachitis). These lesser seizures have continued for some five months. Crying or excitement suffices to start one. They begin as he wakens about 6 A.M., occur again before rising, and there are often 5 or 6 in all before breakfast. He is a playful, uneasy little fellow; is said to be "awfully irritable and cross." Owing to large tonsils and a pug nose, he is a mouth-breather, though it is claimed that he sleeps with his mouth shut. Sleeps from 8 P.M. to 7 A.M., but is not sleepy by day. Maximum circumference of head 50 cm. Tongue clean. Is said to grow well. The fontanelle was very slow in solidifying, and did not fully close until after he was 2 years old. At the time seen there was a decided broad elevation at the site of the fontanelle. No paralysis anywhere. "Quite a cough, especially at night, quite a whoop," says the mother. With the cough recently there is also a bad odor to his breath. Weight scant 30 lbs., a gain of barely a pound in a year. Has a childish form of abbreviation of his words in speech. "He is crazy to eat all the time, and will eat anything."

Doubtless in this case all the attacks were of rachitic origin. He was placed on thyroid and syrup of the iodide, the previous treatment being continued as well. A month later, the father wrote me of "the complete recovery" of the boy. He says further: "The baby seemed to improve immediately, and in about a week the convulsive movements left him, and they show not the least sign of returning. He is also improved in every way." In April, Dr. Applegate reported that the result continued excellent, though the child was still taking thyroid. I saw him again this May. No return of the minor attacks. One "real

spasm" some time ago, from a gross error in diet. Has taken no medicine the last few weeks. He has now a rosy color, clear complexion, and bright, healthy look. Has gained 3 lbs. in weight (*i.e.*, in 5 months, to less than 1 lb. the previous year). The peculiar elevation at the fontanelle has disappeared, so that now there is only a slight fulness of that region. "He has grown much stronger on his feet." Mornings he still has a foul breath. The four upper middle teeth are little more than stumps. T. normal. P. 110, and apt to be fast.

While the symptoms in this boy, directly due to the rickets, yielded promptly and have not returned, it is still possible that the occasional full convulsion may prove to have become established. As the older brother had convulsions when about his age, but not since, and the patient has improved so well, it may fairly be hoped he also will now continue free.

A fourth case, seen in May, 1901, might be mentioned in which thyroid also acted admirably, but as it was very similar to the last, it is hardly necessary to give the details. In still another case of rachitic convulsions, seen before either of these, it is worth noting that the mother had a goiter (said to have followed measles).

While it has long been recognized that rickets may cause convulsions in the very young, the above cases indicate that obscure seizures, not strictly convulsive, may occur in children, from one form or other of disturbed general nutrition. And as evidence of such fact, this series of illustrative cases is, I believe, worth putting on record. It is chiefly to the rachitic element that the rest of my remarks will be directed.

As there appears to be much confusion regarding matters in this connection, it may not be amiss to point out some of the different questions here:

1. As to the irritability of the nervous system that may accompany rickets. This is now generally recognized. Nodding and rotatory spasms of the head, laryngospasm, etc., are largely of rachitic origin. Eclampsia infantum and the convulsions of dentition may often be due to the same cause. Tetany is another condition often associated with rickets; and what is more interesting here, it may also follow loss of the thyroid function. Thyroid feeding even proves successful in a proportion of cases of tetany—possibly those due to rickets.

2. Another, and less settled question is that of the causation

of epilepsy by rachitis. Gowers is about the only systematic writer who regards it as a prominent factor. Ohlmacher, formerly of the Ohio State Institution, has taken up this view, approaching the subject from the pathological side. He concludes that rickets plays an important part in the history of idiopathic epilepsy. My cases do not bear directly on this point.

3. It by no means follows that treatment directed to rachitis would be of value in any given case after true epilepsy had developed.

4. We now come to the use of thyroid in rickets. It has recently been noticed, though I have not the reference at hand, that some but not all the disturbances seen in rickets are relieved by thyroid. But I know of no cases like those described treated in this manner. They indicate that the severer forms of nervous disturbance, when directly due to rickets, are fully amenable to this treatment. So far the remedy has proven trustworthy, and in its action surprisingly prompt. The underlying trouble may not be cured, but its effects are so far ameliorated as to cause no further anxiety. In these cases its administration has not hindered the natural growth of the child, but favored it. The length of time that this remedy is to be kept up is a matter that must be determined in each case. To head off any tendency of rickets to induce epilepsy, the agent should be given in time and before a convulsive habit has been established.

Reports of the trial of thymus, suprarenal and ovarian extract in rachitis show them to have no definite value.

5. An allied question is that of the value of thyroid in epilepsy. The above cases do not bear on this point. The results obtained by Froehn and Hoppe (1899), were not such as to indicate any lasting benefit. And my own experience with it in several cases has been no more favorable, even though the patients had clearly suffered in earlier years from rickets. The use of thyroid in the eclampsia of pregnancy is, however, highly recommended by H. O. Nicholson², who makes a strong argument and supports it with the report of successful cases.

6. Are such cases as the above really epilepsy, and what would become of them if left alone? They seem to exhibit a

²Scot. Med. and Surg. Journal, 1901, June.

tendency to retrograde, at least as to frequency of attacks, though, perhaps, not as to severity. The longest case covers a free period, under treatment, of nearly two years. This may not include the possibility of something developing later, though it looks like a cure of the nervous disturbance. In any case the benefit received marks an advantage not to be secured in any other way.

In obscure cases of this kind, we are certainly warranted in making a careful search for signs of rickets or similar aberration in nutrition, and of making a trial of thyroid. For the present this remedy should be considered an essentially symptomatic one, and the other usual curative means should all be promptly instituted. To attempt any discussion of the various theories of the causation of rickets, of the claim that it is on the increase in America, of the relation of scorbutus to rachitis, of fetal rickets, etc., is beyond the purpose of this paper. Some of the points made, may, however, be summarized as follows:

1. In the young there occurs a class of cases characterized by recurrent attacks of heterogenous type, and that may conveniently be called "pseudo-epilepsy."

2. This form of trouble is curable.

3. Such cases, so far as here studied, are due to, or associated with, disturbances in the general tissue metabolism of the body.

4. Some of these are in whole or in part of rachitic origin.

5. Troubles of this kind when due to rachitis are amenable to thyroid treatment.

6. True epilepsy is not remedied by thyroid, even in a person who was once rachitic.

7. It is evident that in many cases there is a closer relationship between rachitis and athyreosis than has heretofore been recognized. There must be a relative inadequacy of the thyroid function in these cases associated with rickets. Either, as one of my cases indicates, there is a serious impairment of the activity of the gland, or thyroid feeding serves to burn up harmful material at large in the system.

A CASE OF TUMOR OF THE CEREBELLUM; AUTOPSY.

By O. T. OSBORNE, M.A., M.D.,

PROFESSOR OF MATERIA MEDICA AND THERAPEUTICS AT YALE UNIVERSITY.

On December, 19, 1900, Mrs. X., consulted me on account of a chronic cough and dizziness. She was sixty-four years old, had never been very strong and always more or less neurotic. This cough she had had for years, more or less exaggerated at times, with, lately, considerable expectoration. The condition of the lungs was that of a chronic bronchitis, and examinations of the sputum showed no tubercle bacilli. The cough and this bronchitis played no part in the future history of the case.

For four months she had had a great deal of palpitation of the heart and vertigo, these occurring synchronously. With this dizziness there was no ringing in the ears, no disturbance of the eyes, and no nausea. She also had no appetite and was very constipated. The temperature at this examination was 97.4° , and the pulse 96. She was unable to walk without swaying, and would fall if not assisted. This ataxic condition had been gradually developing during the last four months. There was and had been no headache, pupils reacted normally, patellar reflexes were normal. The urine was found normal with the exception of an increased amount of urates. The diagnosis was made at this time of some disturbance of the circulation in the cerebellum.

She was put to bed, and while strophanthus quieted the heart and the nutrition was maintained, no treatment of the cerebral condition was of any permanent avail. Her dizziness, which during the previous months was especially marked when she first lay down, also often occurred in the middle of the night without any cause or disturbance, or without even a dream; the simple fact of awakening would precipitate an attack. The result of bed-rest was a temporary improvement; the dizziness became less frequent, and consequently the attacks of palpitation were less frequent, as the latter occurred only at the time of the vertigo.

In February of 1901, that is in two months, the dizziness, which had become infrequent with the first rest treatment, had begun to again increase in frequency. She was utterly unable to sit up without becoming dizzy, and could not turn her head suddenly without an attack of vertigo. In the latter part of this month the dizzy turns became again less frequent, but more severe. She would lie all day with her head turned to the

right, claiming that she was dizzy if she turned her head to the left. This was without regard to light. The muscles of that side of the neck were slightly contracted, but the contraction could be easily overcome.

Soon after this the attacks of vertigo began to show epileptoid signs, and during the latter part of the month (February) there were typical epileptic convulsions. Just before this, during the attacks of dizziness, she had begun to complain of double vision, and objects would move and wave before her eyes. One month after she first went to bed she had begun to complain of ringing in the ears during these attacks of vertigo, beginning first, and at first only, in the right ear, but late in February there was ringing in both ears. During these attacks she now began to complain of intense pain in her head referred to the occipital region and described by her as of a "tearing apart sensation" with the sensation of "saw-teeth pricking."

When the epileptic attacks began the left arm was the first to move, and the body always turned toward the left side first. Her movements were frantic and repeated. There was more or less spasmodically voluntary clutching and tearing of the hair with both hands, and the expression of the face was that of intense pain and agony. There was no absolute loss of sensibility, as she would be apparently insensible and then immediately complain of the pain in her head. Inhalations of nitrite of amyl stopped these attacks. She would then sleep more or less soundly from a half hour to an hour. Large doses of bromides kept these attacks, at first, from occurring more frequently than every other day, but they soon became of daily occurrence, and except for the inhibitory power of the amyl nitrite a status epilepticus would develop, she having repeated attacks during two or three hours with constant head-pain, and requiring several attendants to keep her from clutching her throat and tearing her hair. During these periods of her trouble the reflexes were all exaggerated, and the vision was perfect.

From this time on, *i.e.*, the latter part of February, she gradually failed, the epileptic attacks became more prolonged; they would come on very rapidly and the convulsive part was more prominent than in ordinary epileptic convulsions. She would thrash around the bed if not held, and as above stated would tear her hair, clutch her throat and throw herself out of bed if not held. She frequently gave sharp cries during these attacks. The eyes were sometimes staring, but from beginning to end there was never any paralytic eye-signs. She gradually ceased to complain of the ringing in the ears.

About March 4, 1901, she became rather stupified and slept a great deal. The bromide was discontinued, as there were

now no more epileptic attacks. She could be aroused to swallow or to speak, and recognized the people about her. At this time her eyes were carefully examined and no retinitis found, and the optic disks were normal in appearance and normally cupped.

On March 5 she could take no more food, and lay in pretty constant coma, in which she remained until March 8, when she died. During this semi-comatose period when she could be aroused she would sometimes cry because she said she was unable to say what she wanted to say, and would sometimes start to ask me something and once said that she knew what she wanted to ask but was unable to tell me what it was. Previous to this period she had complained of incoördination in that she said she would attempt to turn to one side of the bed and find herself turning to the other side. She would start to take something with her right hand and find herself taking it with her left. Up to the very last day that she lived her pulse was always good, and she died without having had any Cheyne-Stokes respiration.

There was no paralysis of the sphincters. During her last days there was a good deal of superficial venous congestion, so much so that her face was very dark, as were also her extremities.

My diagnosis had been made at the time the epileptic convulsions began of tumor of the cerebellum, more on the right side than on the left, which diagnosis was confirmed by Dr. Francis Bacon.

We were not allowed a general autopsy in this case, but were permitted to open the skull and examine the brain. The autopsy was performed by Professor Charles J. Bartlett. We found the brain normal except that the right lobe of the cerebellum was distinctly larger and firmer than the left on account of a tumor within it. An examination under the microscope showed this tumor to be a glioma. This growth was sufficient in size to give the pressure symptoms which the case presented. I inferred that the tumor was on the right side, because the ringing of the ears began on that side, and the cortical irritation from the pressure caused the convulsions to begin in the left arm. I expected to find a considerable amount of fluid in the third ventricle. We did find some fluid, but perhaps not more than the normal amount.

CHICAGO NEUROLOGICAL SOCIETY.

December 19, 1901.

The President, Dr. Hugh T. Patrick, in the chair.

The Relations of the Areas of the Various Levels of the Spinal Cord in Cross Section.—As a result of studies made in the laboratory of the University of Chicago by Mr. Davis concerning the relations of the areas of the various levels of the spinal cord in cross section, Dr. Donaldson made the following report. He said that a number of spinal cords had been examined and an average length obtained. With this average length as a base line curved lines were drawn in a parallel direction representing first the variation from it produced by tracings of the spinal enlargements, and second variations from it produced by tracings from the axial lines of the gray and white matter. In other words, curvilinear lines were drawn in the same direction as the base line, showing the relations of various levels of the cord *in toto* and also the relations of sections of the gray and white matter in progress through the cord.

The old plat which appeared in Quain's Anatomy and other text-books was copied from the original work done by Stilling. His chart was made from sections of a five-year-old child's cord. It has appeared in the literature since 1874 without mention of the fact that the chart was made as indicated. As yet no comparison can be made between the child and the adult cord as the work is too new.

The claim is made for this sort of work that by a comparison of the area of the cross section of any given spinal cord with the corresponding area of the standardized cord knowledge might be had as to the condition of the cord compared with the normal.

Dr. Hugh T. Patrick inquired whether a piece of foil cut out to correspond to the gray matter was used as the basis of measurement.

Dr. H. H. Donaldson said that the section was first enlarged about four times, the outline then drawn on tracing paper which is placed over the foil, which is cut in accordance with the figure. From that figure the calculation is made. The foil used for this purpose must be of uniform thickness so that the measurements will be accurate. The foil is sold in strips and as the ends of the strip are much thinner than the middle piece, only the latter is used. These strips are all weighed so that they will correspond to the standard. The measurements can also be made with cardboard.

Dr. Hugh T. Patrick thought that this subject was of some practical importance in some of the degenerate diseases, especially cerebellar ataxia, in which the central nervous system has been found very small. He could not recollect any statement bearing on the small amount of white or gray matter, but simply recalled mention of the small size of the brain, the cerebellum, pons, medulla oblongata and cord. In one case measurements of the cord were given in different diameters. He was of the opinion that in connection with some of the congenital diseases these comparative measurements might be of considerable interest.

Dr. H. H. Donaldson saw a possible use for these measurements in the conditions mentioned by Dr. Patrick. It would enable one to state

how much a given section deviated from the standard. He said that although the total area of white and gray matter might be a little larger or smaller, the relative development was very well maintained.

Dr. L. F. Barker inquired as to the kinds of reproductions in Stillé's Atlas.

Dr. H. H. Donaldson said they were lithographs and were probably pretty accurate. The cross sections of the cord were placed in cells filled with alcohol. The observations were made while the specimens were in a good state of preservation, before the alcohol had shrunk them.

On Growth Changes in the Ganglion Cells and Dorsal Root Fibers from Different Segments of the Spinal Cord.—This paper was read by Dr. H. H. Donaldson. Dr. Donaldson said that the results presented were based on work which had been done in the laboratory by Mr. Hatai, who is a fellow in the department, and who, at Dr. Donaldson's suggestion, undertook a study of the growth changes in a certain class of nerve cells. This class being the cells constituting the dorsal ganglia of the spinal cord.

The animal used was the white rat. Ganglia were taken from three different segments of the cord of each animal used. The ganglia examined were the sixth cervical, the fourth thoracic, and the second lumbar. The animals selected for study were four in number. The weight of the animals was ten grams, twenty-four grams, sixty-eight grams, and one hundred and sixty-seven grams, respectively. The ten gram rat was about five to eight days of age. The largest, about six or seven months old. At about the sixth month rats begin to reproduce, so that the largest one had already reached the age of reproduction. We have then spanned between the smallest of these rats and the largest concerned a period extending from shortly after birth to maturity. In each of these animals three spinal ganglia and the connected dorsal nerves were examined.

The first point investigated was this: Is the number of the nerve cells constituting a spinal ganglion constant from birth to maturity? The figures which were obtained for the cervical ganglion were as follows: In the rat weighing ten grams there was found something over ten thousand of these cells. In the rat weighing twenty-four grams, over nine thousand cells. In the sixty-eight gram rat, over twelve thousand, and in the hundred and sixty-seven gram rat over eleven thousand.

The differences in these numbers were interpreted as individual variations occurring in the number of cells in spinal ganglia in which there is no decrease or increase,—that is in the sense of production of new cells,—during the growing period. Dr. Donaldson thought it might be fairly inferred from these observations that the number of spinal ganglion cells remains constant during this period. That is an important point to settle. This statement is not, however, equivalent to a statement that no changes are taking place in these ganglion cells during this period. As a matter of fact all the cells are growing, that is, increasing in size.

Furthermore, the recent studies of Hatai on the spinal ganglion cells have shown that there are two classes of cells. They may be divided into the small and the large cells. Under these circumstances it was of interest to determine whether the relative number of small cells was the same at maturity as at birth. So as not to overburden his hearers with this mass of figures, Dr. Donaldson used simply those for the sixth cervical region in a diagram which showed the ratio of large to small cells. There was in this ganglion a certain number of small cells and large cells which footed up to the total. Dr. Donaldson called attention to the fact that these numbers are variable, the large cells steadily in-

creasing in number, whereas the small cells drop off in number as the rat increases in weight. Thus, if we make a ratio of the small cells to the large cells, we find that in the youngest rat there are something over 3.4 small cells for every large one. At the next stage three small cells for every large one, at the third, two and three-tenths cells for each large cell, and in the last rat one and four-tenths cells for every large one. In other words, with the increase in age of the animal the number of small cells steadily diminishes and the number of large cells is correspondingly increased.

In the ganglia of the thoracic and lumbar regions the same changes occur. The next point touches the number of nerve fibers in the dorsal nerve roots. Our usual representation of the spinal ganglia is to draw a single ganglion cell on the board and ask our audience to multiply this unit and make a ganglion of it. This typical ganglion cell always has two branches, one of which passes to the spinal cord, as the dorsal nerve root fiber, and the other towards the periphery, in the peripheral nerve. If this completely represented the structure of the ganglion then we should have as many fibers in the dorsal nerve root as we have cell bodies in the spinal ganglion, because each ganglion cell giving rise to one branch forming the dorsal nerve root fiber would be represented in the root by one fiber, and in the ganglion by one cell body. From studies, both on mammals and on frogs, we know that every time the attempt has been made to determine the relation between the number of cells in the ganglion and the number of fibers in the root, there has been found a large excess of ganglion cells in the ganglia. Observations were then directed to finding out the exact relationship between the two.

The total number of the dorsal root fibers was shown in a diagram for the cervical, thoracic and lumbar nerves. Dr. Donaldson said that in the cervical root the number when smallest was 1,998, increasing to 4,227 when largest, and the same thing appears in each one of the other columns. Thus if you take a rat of ten grams, he will have in this locality 1,998 fibers for that particular dorsal nerve root, whereas a mature rat has 4,227 fibers in the same nerve root. In other words, the number of fibers in the dorsal root has materially increased, between the ten gram stage and 167 gram stage. This is a new point as regards the mammal. As a frog grows larger the fibers in the dorsal nerve root increase in number. Thus while it has been known for a long time that this takes place in the frog, it is new to the mammal, but if it holds good in the frog and in the rat it will most probably hold good in man. In the rat at birth, then, we have one fiber where at maturity there is something over two. In the thoracic region we find one fiber at birth to two and a half at maturity, and in the lumbar nerve one fiber at birth to two and one-tenth at maturity. It holds good then in all of the different levels that the number of fibers is at first small and steadily increases as the rat grows larger. The suggestion at once arises that we may associate this increase in the number of fibers with the increase in the number of large nerve-cells in this ganglion. In the cervical region the number of fibers is nearly equal to the number of large cells. It is 1 fiber to 1.2 large cells; 1.092, 1.097, and 1.1 for the four rats chosen.

In the thoracic and lumbar regions there are nearly twice as many of the large cells as there are fibers, so that according to this observation the cervical differs from the thoracic and the lumbar ganglia in this relation of the number of the large cells to the number of fibers. The ganglia are differently constituted.

Now to return to a consideration of the number of cells in the young ganglia as compared with the number of fibers in the corresponding dorsal

root, and the relation of these two during the growth process. For every fiber in the cervical dorsal root there are at birth 5.5 cells, which number gradually diminishes until it drops down to 2.7 cells at maturity. Not half the cells are in commission, in the sense of furnishing dorsal root fibers, in the cervical ganglion of the mature rat. The discrepancy is much more marked in the thoracic and lumbar regions. They start with 11 cells to every fiber and end up with about 5 cells; ending where the cervical began. In every instance there is a tendency for the cervical ganglion to be precocious and more complete in its development.

We have then verified completely the fact of the excessive number of cells in the spinal ganglia. We have shown that that excessive number decreases gradually as the number of nerve fibers in the dorsal root increases with the growth of the young, and that at maturity there are in the rat anywhere from 2.7 to 5.7 cells in a spinal ganglion for every fiber that exists in the dorsal nerve root.

These are the principal points which Dr. Donaldson wanted to make evident although others were shown on the diagram, but they did not bear on these two fundamental points. First, the constancy of the number of nerve cells in the spinal ganglion throughout life. Second, the progressive increase of the number of nerve fibers in a dorsal nerve root. Third, the disparity between the number of fibers and the number of cells, that for the fibers standing to that for the cells as 1 to 2.7 or 5.7 in the several cases.

Dr. Donaldson spoke as to the possible application of these results. They were also studying the activity and growth of intelligence in the rats. They found that rats which are of about this weight, 24 grams, and which have therefore about one-half the total number of nerve fibers they are destined to have in a dorsal nerve root, are the most active. When they get larger they become slow and comparatively inactive. In other words, as far as this particular animal is concerned, the very active period is correlated with the period in which the afferent roots are only half completed. The animal has still to double the number of nerve fibers in the dorsal root, and while that is going on it becomes a much less active animal than it was in the early stage.

Dr. Donaldson believed there is every probability that this condition of things will be found to obtain in man. They had no spinal cords at present to work on and hence are blocked in their studies. Although it is impossible at the moment to correlate these periods of development with the period of development in the growing child, he would say that between 25 and 68, somewhere about 30 or 40 grams would correspond to a six or seven-year-old child. If the relations in the development of the nervous system are the same, we would then find the child with incomplete dorsal nerve roots at a time when it is about as active as it ever will be. The settlement of this question must await the appearance of suitable material.

Dr. L. F. Barker regretted that Dr. Donaldson did not divulge his opinions based on the results of this work. Naturally a great many questions arise. He was especially interested in getting an explanation of the reason for the increase in the number of fibers. Three possible explanations suggest themselves. One, the growing-out of more fibers from the cells in the ganglion to the cord, probably the most likely explanation. The second possibility would be a division of single fibers already present, and the third an outgrowth of fibers from the cord to the ganglion, although that might be the least plausible.

The second point was the disappearance of so many of the small cells, the increase in the large cells, which apparently was due to the development of the small cells. Nevertheless there are in all cases a large

number of small cells left undeveloped. He said he would like to know whether these were surplus cells that never attained to maturity, remaining small cells without any processes, or whether they possibly can be cells which send out axis cylinders to end in cell bodies of other neurones. If they remain immature it would be in accord with what is believed to occur elsewhere in the nervous system, namely, that in all parts of the nervous system, as in most parts of the body, there are cells left in an immature state capable of further development under certain circumstances. If that is the case there are as many reserve cells in the ganglia as there are cells in commission. That would be a very large excess of reserve cells, but if it is remembered that as in the substantia gelatinosa many cells develop and degenerate, as many as attain maturity, the excess would not seem so great. He also asked for the reason of the increase in the ratio of fibers to cells, especially in the cervical region. Naturally the first thing to which attention would be directed is the possibility of the enormous development of the hand as a sense organ as compared with the thoracic region, and the lower extremity as a sense organ. He did not know whether in the rat the hand was more of a sense organ than the foot. In the human being we might naturally expect a greater number of root fibers in the cervical roots than in the thoracic or lumbar. The hand area in the cerebral cortex is very large compared with the trunk or foot area. Another point, that this change in proportion takes place during the point of greatest activity of the animal, is extremely interesting, and suggests the possibility of a relationship between activity and development. It is a well-known fact that the exposure to strong light of prematurely-born cats increases the rapidity of development of the myelin sheath. Why could it not be possible that the further activity should determine this rapid change in the ratio of fibers to cells? He hoped that Dr. Donaldson would explain these points.

Dr. Donaldson said that we might account for the increase in the number of fibers in the dorsal nerve root by assuming that the new dorsal root fibers grow out from cells which entered into commission in the later stage of the ganglion, being immature in the early stage. That explanation receives its best support from the relation in the cervical region between the large cells and the number of fibers. In the dorsal nerve root the number of large cells is equal to the number of nerve fibers. The division of fibers does not appear so probable in the sense in which it would have to take place, although many of the fibers are divided. These divided fibers all pass to the periphery, but such a division has always been observed at a stated place, the dividing branches being of equal length and equal growth, and do not simply represent a series of twigs which might run out and thus add to the number of fibers. All the evidence tends to point toward the throwing into commission of new cells for the addition of new fibers to the dorsal nerve root.

The next question, as to the excessive number of cells in the spinal ganglia, he deemed a rather hard nut to crack. There were a few cells, the axones of which ended within the limits of the spinal ganglion itself. These, however, are few in number and cannot account for the very large apparent excess of the cells in the ganglia. The excess will probably be found to be due to the immature cells which have not yet sent their axones out any great distance. The higher one goes in the nervous system, the greater appears to be the excess of cells found in the different localities. In man the excess is probably much greater than in the frog or rat. That is a rather dangerous thing to say because it is in the nature of a prophecy. However it does not appear to be impractica-

ble. It is rather difficult to say what is the function of these cells and yet there appear to be many of them in the cortex and there is no reason why they should not appear in the spinal ganglia. It seems to be a property of the nervous system to contain more parts than it actually needs and lives up to.

As to the difference between the number of fibers and the number of cells in the thoracic and lumbar regions as compared with the cervical region, he believed that possibly the sympathetic nerves have something to do with this. He said his first impulse was to associate the excessive number of cells in the thoracic region with the sympathetic connection which is absent in the cervical. This, however, is but a poor explanation, as it is open to question. As to use and disuse, something might be made out of that suggestion, even though there is nothing at present that would bear directly on this. He suggested that rats might be brought up in loneliness and solitude where activity would be reduced to a minimum, and then be compared with rats brought up in playful activity, so as to determine whether there is any difference in the development of the spinal ganglion cells.

Dr. Hugh T. Patrick inquired whether the fibers in the brain had ever been counted. Whether there is a great increase in the fibers with the mental and intellectual development of the individual, or whether they simply take on sheaths. Whether the corpus callosum at birth contains more fibers than in the adult.

Dr. Donaldson said that he had found the fibers present, but they did not have any medullary sheaths. The cell-bodies might be present, he said, but not their axones. He felt that the axones are a later growth in a large number of the cell elements. These observations have been made only from the standpoint of medullation, showing the increase in medullation as maturity is reached. He was positive that the axones are not present in rats. The rat's cerebrum can be cut very deeply and a few weeks later it is impossible to find the scar. The wound grows over completely, because the brain is cut at a time when most cell elements are in a neuroblast stage. There are no axones. For that reason it is difficult to find the place of injury.

Dr. J. W. Engbert said that from comparative anatomy and biology it has been ascertained that the cord at one time had different segments which seemed to be more or less similar. In man it is found that certain segments gain a great deal, as, for instance, the cervical and lumbar, whereas the thoracic loses. In what does the gain consist? Do the segments gain chiefly in cell bodies, or do they send out fibers?

Dr. Donaldson said that in the gray substance, where it is voluminous, there is an excessive number of cells. There is also an excessive number of fibers as is shown by the rise in the curve in the white substance coincident with the enlargement of the gray. The white substance is distributed both around the gray matter and within it. In the lumbar region the gray matter is comparatively less than the cervical enlargement, and in that sense the smallness of this segment is really a reduction in the amount of white matter in it. It is accomplished by change in the shape of the cells. They lie like watermelons, on end, in the thoracic region; on their side in the cervical; and in the lumbar region as if they were set on their side with the widest plane in the plane of this section. They have different shapes according to the segments in which they are located. Though the segments are short in the lumbar region the amount of gray matter is as large as in the cervical segment.

Dr. L. F. Barker asked if the base lines were made so that the seg-

ment distances were equal, how, then, would the gray matter lie.

Dr. Donaldson said that the vertical length would have to be multiplied by the horizontal length, and the difference in the area exaggerated by making the segments equal. There is a relative increase of gray matter in the two enlargements when reduced to cubic contents.

March 20, 1902.

The President, Dr. Daniel R. Brower, in the chair.

A Case of Hysteria.—Dr. Elbert Wing reported the case of Miss H., aged fifteen years, who complained of a constant ache in all of the teeth of the upper jaw, accompanied by tenderness in all of them; both the aching and tenderness being greatest on the right side. The pain is described as a dull, heavy ache, rather than sharp, cutting or lancinating, varies somewhat in severity, and is present all of her waking hours. The tenderness is not great and not uniform in all of the teeth. The pain is influenced somewhat by cold, but not at all by heat. It is not increased by the acts of talking or eating. In May, 1901, the patient had an attack similar to this, in which the teeth of the lower jaw were involved. It began in a few of the teeth on the left side. Dr. F., her dentist, drilled into these, destroyed the pulps, and filled the root canals. This did not stop the pain, and finally the affected teeth were extracted. This treatment with variations ran the circuit of her lower jaw, until all of its teeth were extracted, and a plate of artificial teeth put in. About six weeks after the teeth were all extracted, the pain, diminishing gradually, ceased. Six weeks after all pain ceased in the lower jaw, it began in the teeth of the right side of the upper jaw, and had continued until this examination was made, December 21, 1901. The dentist did not excavate or extract the upper teeth.

Three years ago the patient had what she described as "soreness in her scalp," which was not relieved until her hair was cut short. Then she had some trouble with her eyes, not inflammatory, in which she says she "almost lost her sight." Later she had attacks of spasms. She says that one doctor stuck pins in her and said that "there was nothing the matter with her." She has had no other illness, and menstruation is fully established, regular and normal in every way.

The patient's father has had "nervous trouble," is now well, and the family history is otherwise negative.

Examination shows a young woman, five feet eight inches tall, large in proportion, in excellent general nutrition, and full mammary development. Appetite good; no symptoms of indigestion; bowels act normally, and sleep is good, except when disturbed by the pain in the teeth. Loss of sleep from this cause, she says, is considerable. Patient's appearance is that of excellent health. When alone with the examiner the patient's manner is quiet and free from peculiarity, except lounging in her chair, but when her dentist, who seems familiarly acquainted, is present, her manner is petulant and capricious. The thoracic and abdominal organs are normal.

Voluntary motor power is normal and symmetrical. Tests for touch and pain were made with camel's hair brush, and common pin. Sensation to touch is slightly less throughout the left side. On this side there are areas of moderate size of diminished sensation over the upper half of the chest, the hypochondriac region, the outer and middle third of the thigh, and two places on the leg. There is absence of pain to the prick of a pin over and just above the left

breast, and there is diminished pain sense in the areas partially anesthetic to touch, and slight anesthesia over the left scapula. Epigastric reflex is slightly less on left side; abdominal walls symmetrical; elbow-jerks are absent; knee-jerks are present and fairly symmetrical. The pupils react normally, and vesical and rectal control are reported normal. There is moderate tenderness in the upper teeth, more pronounced on the right side, and some in the upper branch of the fifth nerve of the right side. There is no other tenderness. Physical examination is not carried further. The patient was referred to her home physician with the diagnosis of hysteria and the usual outlined suggestions for treatment.

Dr. Harold N. Moyer asked whether the patient had a mania for operations, to which Dr. Wing replied: "It would seem so."

Dr. Charles L. Lodor inquired whether there were any anesthesia of the mouth.

Dr. Wing replied that there was not.

Dr. Lodor asked whether the teeth were sensitive or not.

Dr. Wing replied that they were not.

Dr. Sydney Kuh recalled the case of a girl who presented herself at Czerny's clinic in Heidelberg, with the statement that she had swallowed a pin. She had considerable pain; her stomach was opened, and a pin was found in the wall of the stomach. The patient returned subsequently two or three times, wanting to undergo another operation. The suspicion of the surgeon was aroused; he refused to operate a second time as he was firmly convinced there were no more pins in the stomach.

Dr. Kuh also detailed a case of hysterical deception which occurred in the practice of a country doctor. The country practitioner sent the specimen to Dr. Edmund Andrews for examination, with a history that the girl had swallowed a snake, that she could feel it moving about in the abdomen, and insisted that something be done for its removal. But little or no attention was paid to her until one day they found her in front of the house quite ill apparently. She had vomited and in the vomit there was a snake-like body, which was sent to Dr. Andrews for analysis, and it turned out to be the gut of some animal.

Dr. Daniel R. Brower mentioned a case which occurred in the practice of Dr. Fitch many years ago. It was stated that the woman's urinary secretion had been entirely suppressed, and that she was secreting urine by the gastric mucous membrane. He was called in consultation in this case. Dr. Fitch had the contents of the woman's stomach examined a number of times, and always found urine in the contents. He suggested to Dr. Fitch that she be put to bed and some responsible person be directed to watch her. This was done, and it was found that the woman would urinate, and then swallow the urine.

Dr. Lodor referred to a patient who had some of her teeth extracted on account of a supposedly distressing condition of them. She exhibited the usual stigmata of hysteria. She was referred to him with the recommendation that the dental nerve be trephined for excessive pain; but on examination he found nothing wrong with the patient's mouth, and said the case was purely hysterical.

Periscope.

• *Rivista di Patologia Nervosa e Mentale.*

(Vol. vii, fasc. 6, June, 1902.)

1. Anomaly of the Cerebellum. D. DELLA ROVERE and B. DE VECCHI.
2. Complete Ablation of the Thyro-Parathyroid System in Dogs Treated with Halogenated Fats. G. CORONEDI and G. MARCHETTI.
3. Contribution to the Pathogenesis of Exophthalmic Goiter. E. TEDESCHI.

1. *Anomaly of the Cerebellum.*—A minute description of what is believed to be the first case on record of division of the worm into two distinct lobes.

2. *Complete Ablation of the Thyro-Parathyroid System.*—Six dogs, subjected to thyro-parathyroidectomy were treated with bromated fat (dibromostearic acid). In most of the cases it was administered before the operation; in one it was continued after the operation, and in another administration was solely post-operative when the symptoms induced were at their height. The effect of such treatment was attenuation and final disappearance of the phenomena caused by the operation, or their entire absence for a more or less prolonged time. Not only was this true of nervous and muscular excitation and depression but also of the dystrophies of cachexia, the result being prolongation of life in a condition of more or less perfect health. Three dogs subjected to the same operation were treated with chloro-iodostearic acid and two with diiodostearic. In the former, results were most satisfactory; in the latter, hypodermic administration, as used in one instance, alone gave good results. The authors believe that the salutary influence of the halogens studied, upon animals subjected to complete ablation of the thyro-parathyroid system may be attributable not alone to the symptomatic effect of Br. and I., but to a more complex physiological action, representing within certain limits the functions of the thyro-parathyroid tissue; and that, should this theory be proven, the experiments cited constitute a valuable contribution to the biological functions of Br. and I. in the physiology of the thyro-parathyroid system.

3. *Contribution to the Pathogenesis of Exophthalmic Goiter.*—A previous series of experiments having shown that lesions of the restiform bodies provoked typical symptoms of Basedow's disease, the author has sought to ascertain the relation of the thyroid to such manifestations by increasing or diminishing the thyroid function in animals in whom lesions of the restiform bodies had been induced. The work is thus summarized: (1) in animals, lesions of the restiform bodies (especially of their anterior portion) produce marked symptoms of Basedow's disease; (2) in animals in whom the symptoms of Basedow's disease have been induced by lesions of the restiform bodies and in whom such symptoms have greatly diminished or disappeared, they may be reproduced wholly or in part by producing in them a condition of hyperthyroidization; (3) in animals in whom the thyroid has been removed, lesion of the restiform bodies does not cause symptoms of Basedow's disease; (4) in animals in whom the symptoms of Basedow's disease have been induced through lesion of the restiform bodies, removal of the thyroid diminishes or causes the disappearance of the greater part of such symptoms.

R. L. FIELDING (New York).

Revue Neurologique.

(Vol. 10, 1902, No. 9, May 15.)

1. Benedikt's Syndrome, Single Tubercle of the Cerebral Peduncle. L. ASTROS and E. HAWTHORN.
2. Tic and Function. HENRY MEIGE.
3. Contribution to the Psychophysiology of the Dying. Two Cases of Chronic Chorea. N. VASCHIDE and CH. VURPAS.
4. Generalized Atrophy of the Musculature of All the Viscera in a Progressive Amyotrophy of the Aran-Duchenne Type. ANDRÉ LÉRI.

1. *Benedikt's Syndrome.*—The authors consider this affection to be not as rare as has been thought and cite many cases. They give the history of what they consider an absolutely typical case, concluding as follows: The clinical symptoms observed in life were so characteristic that diagnosis was easily given of tubercle of the right cerebral peduncle. The incomplete character and limitation of the lesion were shown at autopsy, as the lesion extended from the pons to the optic thalamus. Paralysis of the right oculomotor began with ptosis, then by progressive extension became total, although incomplete for certain muscles; the pupil was not in complete mydriasis, and for some time responded to light stimuli. The incomplete oculomotor paralysis has been noted in many cases and indicates that the lesion has not affected the nerve at its extrapeduncular emergence. The pupil was occasionally myotic. The integrity of the fibers from the superior nucleus indicated that the lesion did not extend to the foot of the peduncle, and that it must be localized in the upper part, where the fibers of the oculomotor nerve are disassociated. It seems there must be peduncular hemorrhages of inferior as well as superior position. In one, hemiplegia is complete, followed by permanent contracture, without disturbance of sensation or trembling; here oculomotor paralysis is usually total. The lesion is situated in the lower part of the peduncle. In the second type paralytic symptoms are at a minimum; this contracture, if existing, is variable; sensory trouble sometimes noted; characteristic trembling is present; oculomotor paralysis partial and incomplete. The lesion is superior and at first there is only compression and excitation on the pyramidal fibers. This second type can not remain pure on account of the extension of its lesions.

For a pathogenic interpretation of the trembling, there must be excitation of the fibers of the pyramidal fascicle by a contiguous lesion, not of a serious lesion destructive to this fascicle. Lesions of the superior position must be more apt to bring this about. There is the question, however, whether a subjacent inferior lesion, a meningitis of the base, could by irritation of the pyramidal fascicles, cause the same symptoms.

2. *Tic and Function.*—Tics, such as they are, may be considered as *perturbations of functional acts*. The following considerations are given in this connection: First, it is necessary to define *function*. There are certain functions, as circulatory, digestive, excretory, taking place without control of the will, and certain motor phenomena are dependent upon special muscular systems. Disturbances of these functional phenomena do not come under tics. Other functional movements executed by striated muscle are controlled by will. Among these motor functional acts, certain, as those of respiration, are vital, and as such must not be confused with the regulative functions. Others, as nictitation, masti-

cation, locomotion, are indispensable and common to all. Others, as salivation, are most useful to individuals, but not universal. Other acts, as writing or swimming, are acquired and termed functional, though they are not indispensable to life nor common to all. Thus the term is very comprehensive and covers many grades; so we look to the principal characteristics of functional acts. In all there is repetition, periodicity. External causes or will may modify these acts, as breathing, and there are individual differences; but there is nevertheless a norm, conforming to the natural law of the least effort, and to this there are no exceptions but pathologic cases, and it is these that are studied. If a subject disobeys the law of the least effort for the functional end, by excess or by incompleteness, there is functional perturbation. A large number of tics are simply this, functional acts which exceed or fall short of the end normally to be attained. Another mode of perturbation is execution of a functional act at the wrong time, as a smile, cry, word, when there is no natural suggestion for them; for function has another characteristic, that it must be preceded by a need and followed by satisfaction of it. Some professional acts are termed functional, and when disturbed, as in cramps, spasms, and professional impotence, may come under the heading of tics. But though most tics are made evident as well by nothing as by anything definite, professional cramp takes place only during the performance of the professional act.

There is still another class. Those functions made out of whole cloth under dominance of an unreasonable idea for an absurd end. Many tics are of this order; true they may be characterized by repetition, need and satisfaction, but the repetition is too frequent and too violent, the need imperious, the satisfaction disproportionate, all abnormal, and this function is inopportune if not dangerous. It is evident, then, that the appearance of a tic denotes imperfection in the mental state, particularly the will. Clinical observation confirms this point of view.

3. *Chronic Chorea at Death.*—The authors, after detailed report of the cases, conclude with the following considerations on their observations during the period of agony: (1) In chronic chorea characterized by continual and purposeless movement, which even sleep does not arrest, the movements cease completely some days before death, in the present cases four days before. The patients resumed their habitual expressions and attitudes; a period of calm appeared to precede the final cataclysm; (2) the patient, although with well-defined anatomical lesions, according to many authors, can not, theoretically at least, act otherwise before death by reason of some indefinable mechanism; the pathological physiognomy is cut off and the patients acquire the function of their automatic movements perfectly, reflexes and volitions. This fact would militate against lesions, or else there would be a curious resumption of function; (3) the observations point in favor of the concomitance of the cessation of these continuous movements and the disorganization of the phenomena of consciousness. In other words, there is an intimate relation between the comatose state which precedes death and the changes due to the psychophysiological troubles of the patients. He falls into a state of coma, ceases at the same time to have the tics, keeping a calm physiognomy and a normal attitude, with an unmistakable mental change. Thus in one case characterized by excessive pathological emotion, weeping and groaning, the patient on cessation of the movements two to four days before death was absolutely passive.

Thus the observations explain, if only to a degree, the psychophysiology of the mental state, going partly to make up the phenomena known as *presentiment of death*. There is a paradoxical state in the troubles due to anatomical lesions which ceases suddenly by reason of approach of death. Conclusion beyond the facts themselves is impossible, but solution of them in the future is to be hoped.

4. *Atrophy of the Visceral Muscles.*—After detailed reports illustrated by cuts of the viscera affected, the conclusion is reached that to-day there can be held paramount one single fact: a myelopathic muscular atrophy need not be confined to the striated muscles of voluntary life, but may affect also all the visceral musculature, the smooth muscles of organic life; in this case the stomach, intestine, bladder, gall bladder, ductus choledichus and heart were all atrophied, not altogether, but merely in the muscular layer.

It is not known whether the lesion reported is or is not exceptional. In the case the atrophy dated sixteen years back, and perhaps a longer one is necessary to produce amyotrophy of the viscera capable of troubling noticeably their functions and of drawing attention to them at autopsy. To this view the authors are inclined after noticing extreme atrophy of the heart which not until the last months produced only a little arrhythmia. The asthmatic respiratory crises, repeated during the last months of the disease, suggest the question whether visceral amyotrophy (heart, muscles of Reissessen) does not play an important rôle in the pathogeny of at least certain "bulbar crises" which so often end the lives of amyotrophics. Other functional troubles also due to visceral amyotrophy will doubtless appear in the future, and already P. Marie has noted in certain amyotrophics persistent constipation, which perhaps would not be independent of intestinal amyotrophy.

JELLIFFE.

The Journal of Mental Science.

(1902. April, Vol. 47, No. 201.)

1. The Treatment of Incipient Mental Disorder and Its Teaching in the Wards of General Hospitals. SIR JOHN SIBBALD.
2. Hallucinations and Allied Mental Phenomena. SIR LAUDER BRUNTON.
3. Hospital Ideas in the Care of the Insane; a Statement of Certain Methods in Use at the Stirling District Asylum, Larbert. GEORGE M. ROBERTSON.
4. Some Further Remarks upon Night Nursing and Supervision in Asylums. FRANK ASHLEY ELKINS.
5. The Bearing of Recent Research in the Posterior Root Ganglia upon the New Theories Concerning the Etiology of Tabes Dorsalis. R. G. ROWS.
6. A Flaw in the English Lunacy Law. ERNEST W. WHITE.
7. Mental Conditions Resulting in Homicide. G. T. REVINGTON.
8. Clinical Notes and Cases. Abnormal Brain of Excessive Weight, J. SUTCLIFFE; With Pathological Report, S. DELÉPINE; Tumor of Frontal Lobes of Cerebrum, T. P. COWEN.

1. *Incipient Mental Disorder and Clinical Teaching.*—The great desideratum of more thorough clinical teaching of psychiatry prompts this able paper of Dr. Sibbald. It is a question peculiarly appropriate for American psychiatry as well. The author points out that Griesinger was the leader in the attempt to provide more adequate clinical instruction in mental disorders. As far back as 1866 he induced the authorities to permit such teaching, which has continued to the present day much amplified. This teaching is now a part of almost every medical curriculum, but is for the most part carried on in asylums, at great distance at times from the medical schools, and with consequent bother and annoyance to both teacher and student. A more vital question, however, is that of the importance of hospital treatment for the early stages of mental disorder in the interest of the patient and quite inde-

pendent of question of clinical instruction. Such wards were first introduced in the Glasgow poorhouse hospital by Dr. Carswell some twelve years past and have done signal service.

Dr. Sibbald gives some suggestions as to the manner in which such wards might be constructed. He speaks of the reasons why patients with incipient mental disease have not received proper hospital treatment and why thus many presumably curable insanities have become hopelessly chronic. The reasons are due to statutory restrictions and to social considerations this latter being one of the banes of present knowledge, or rather lack of it, of diseases of mind on the part of the laity. Thus legal and social reasons are responsible for this neglect.

The author proposes the setting apart of certain wards in the general infirmary for the treatment of these incipient cases, and lays emphasis on the value of the general treatment as advocated by Weir Mitchell in the treatment of these affections. He also refers to the more universal employment of women nurses in male wards, such as is seen in Copenhagen, for instance.

In respect to the clinical teaching the important fact is emphasized that such teaching given in the asylum is of little service to the practitioner since asylum cases are not the kind he is going to see; it is the incipient cases he must learn to recognize if he is to be of service, and these he never sees in such an institution; therefore the greater need for the wider use of treatment of the incipient insane in general hospitals.

[The paper is of importance and worthy of being read in full, especially in view of the New York movement for the establishment of Psychopathic Hospitals as planned by Dr. Peterson, President of the Lunacy Commission. J.]

2. *Hallucinations and Allied Mental Phenomena.*—Dr. Brunton here presents a very interesting paper dealing with a large number of different ideas. Many of these are popular among those interested in psychical phenomena and while little new is added much that is old is conveniently collected under a comprehensive heading. He shows that which is now very widely held by practically all students of psychological phenomena, that many of the heretofore considered abstruse and incomprehensible manifestations of nerve activities are dependent largely upon the greater amplitude of perfection in the special senses of some individuals. The workers in psychic research showed these things to be true some years ago. Dr. Brunton still would believe in divining rods, because, apparently, the explanation of their activity does not come within his ken. This subject has been most ably and exhaustively handled by others. The theory of hallucinations set forth on retinal or other changes affecting a sense organ are interesting but not unique. The article, while not bearing abstraction because of its diffuseness, makes extremely interesting reading.

3. *Stirling District Asylum Methods of Hospital Management.*—This paper must be read in its entirety to be appreciated. The ideals here set forth tempt one to the expression of the feeling that should they become mentally affected the Stirling Asylum would be a most desirable place for treatment. The gradual awakening of the spirit of doing something for the insane is exemplified in the rationale of hospital treatment here outlined. One of the most important features in the article is the thorough advocacy of female nursing for both men and women. This subject is here very ably dwelt upon.

4. *Night Nursing in Asylums.*—Dr. Elkins considers questions of nursing administration holding in the main that: (1) the night arrangements in asylums should closely approximate those existing in general hospitals; and (2) all acute noisy, dirty and destructive patients

be placed at night in dormitories under constant supervision, and be removed only when it is evident they have ceased to require special care. As to the number of patients that can be looked after at night by one nurse, it is suggested that in a ward for acute, feeble and sick patients, the limit should be placed at twenty-five, while in a dormitory for quiet patients, requiring raising on account of their habits or attention during a fit, the number might be about forty or fifty. This paper also pleads for more female nursing for males.

5. *Tabes and the Posterior Root Ganglia*.—Dr. Rows, pathologist to the County Asylum, Whittingham, summarized the theories concerning the pathology of tabes particularly in relation to changes in the posterior root ganglia. He summarizes the theories showing that the hypothesis had lost favor within recent years. Scriuti's modification of the original idea is discussed at length. This Italian observer has said that the degeneration of tabes consists in changes in fibers which have started with some defect and which degenerate under the influence of some stimulus; and the lesions which are found on examination will depend on the situation of the fibers which have been injured by this congenital or acquired lesion, which fibers will, in later life, degenerate if they be attacked by some poison such as syphilis, alcohol, pellagra, etc. This hypothesis is rivaled by that of many modern workers, who maintain that vascular changes are all important in the etiology of tabes and other degenerative conditions. The author does not give any new light on these hypotheses, he simply states them.

6. *Flaw in the Lunacy Law*.—A case of suicide due to the ignorance of the legal authorities as to what constitutes insanity.

7. *Mental Conditions Resulting in Homicide*.—Dr. G. T. Revington gives a summary of the histories of some forty-nine male patients who have been admitted to the Dundrum Asylum charged with murder or with manslaughter. Wives, he says, are the commonest victims, then children, then parents and children. Mothers-in-law seem to be immune. Homicide is stated to be a potentiality in all cases of delusion and hallucination, and that whether a homicide occurs or not is not so much a matter of peculiar mental condition as a matter of environment, a matter of length of time that elapses before safety is sought within the walls of the asylum. Eight of his patients had acute frenzy, twelve were under the influence of alcohol, ten had acute hallucinations and in ten there was mental blankness. He sums up saying that he believes that his homicidal cases did not suffer from any form of mental disease. Most of them he did not consider criminals in any sense of the word, crime being an accident in a mental disorder, not an essential or typical outcome. None of his cases led him to believe in a homicidal mania, a ravenous lust for blood, a brutalized craving to take life simply for the sake of taking life. Ordinary motives such as jealousy, misery, acute fear acting on morbidly active emotional conditions are responsible, he believes, for the lengthy list of murders.

8. *Clinical Notes and Cases*.—(a) Report of case of brain weighing 69 ounces, with microscopical examination showing it to be hypertrophy of brain by reason of diffuse increase in neuroglia and with gliomatous masses—a myxomatous glioma. (b) Tumor of frontal lobe with sleep persisting eight months. The sleep appeared to be natural, the appearance of patient like one overcome by fatigue. He was easy to awaken, would answer rationally for a short time, and then with waning interest would fall asleep, even while eating. Optic neuritis was the only other objective symptom. Sarcoma of frontal lobes was found post-mortem.

JELLIFFE.

Monatsschrift für Psychiatrie und Neurologie.

(1902. April, Vol. 11, No. 4.)

1. Laugh-Stroke (Laugh-Vertigo, Laugh-Swoons). H. OPPENHEIM.
2. The Relation of Hysteria to Epilepsy. O. KAISER.
3. A Rare Form of Crises in Tabes Dorsalis and Tabetic Crises in General. OTFRID FOERSTER.
4. Pathological Anatomy of Paralytic Dementia. THEODORE KAS.
5. Experiment of Psycho-physiological Representation of Sense Perception. STORCH.

1. *Laugh-Stroke* (Laugh-Vertigo, Laugh Swoons).—Oppenheim reports two similar cases of paroxysmal laughter or "Lachschlag." In both at the height of laughter caused by some joke or witicism the patients suddenly lost consciousness for a few seconds and fell to the ground without convulsions. The author concludes that the pathology of such attacks is unknown and that they deserve a separate classification from epilepsy.

2. *The Relation of Hysteria to Epilepsy.* Kaiser presents a critical essay in defense of the recent position taken by Steffens that transitional cases between epilepsy and hysteria still deserve the old title hysterio-epilepsy in the older meaning of the term as first used.

3. *A Rare Form of Crises in Tabes Dorsalis and Tabetic Crises in General.*—Foerster gives a careful analysis of the different forms of the sensory and motor types of tabetic crises with their pathology, and presents notes of cases of "extremity crises" consisting of paroxysmal clonus or tonic movements. Subjective sensory symptoms may or may not precede or accompany such phenomena of motor discharges. The clonic or tonic convulsive movements constituting the form of crises is most frequently seen in the legs. They have an analogous pathogenesis to those of the sensory type, namely, a neuronc irritation and destruction of the reflex arc and its collateral paths in the cord.

4. *Pathological Anatomy of Paralytic Dementia.*—Continued.

5. *Experiment of Psycho-physiological Representation of Sense Perception.*—Continued.

L. P. CLARK.

Neurologisches Centralblatt.

(1902. May 16, No. 10.)

1. Demonstration of Cortical Sight. E. HITZIG.
2. On Acute Cerebellar Ataxia. W. v. BECHTEREW.
3. Failure of Knee-reflex in Dorsal Compression Myelitis with Degeneration of the Posterior Roots in Lumbar Cord. M. BARTELS.
4. Further Over Asthenic Paralysis. S. GOLDFLAM.

1. *Cortical Visual Area.*—From experimental operation on the cortical visual area in dogs, Hitzig advanced the following: (a) that after slight unilateral operations the visual disturbances disappear in a shorter or longer time; (b) this disappearance, like the visual disturbances, at first occurs in the median and under half of the field. After bilateral operation on the cortical visual apparatus he obtained the following results: (a) with two exceptions, the second operation produced a return of the visual disturbances of the first; (b) this disturbance was as intense as in that of the first instance; (c) this disturbance increased. In some cases, it was worse some time after the operation than on the second day; (d) circumscribed section as Munk describes was not observed; (e) the visual disturbance, after some time disappeared.

2. *Cerebellar Ataxia.*—A further communication on a syndrome

noted in the *Neurologisches Centralblatt* in 1900, by the same writer, consisting of a cerebellar gait, vertigo, Romberg, following coma, or ordinary sleep. This was considered to occur in chronic alcoholics, but the case reported by Schweitzer, due to gastro-intestinal intoxication, leads von Bechterew to call attention to the fact that he suggested that etiological factors other than alcohol might cause the symptoms.

3. *Knee-reflexes and Spinal Compression*.—A study of a case of Pott's disease with complete paralysis and loss of knee-jerks. A practically complete transverse lesion was forced at the fourth dorsal segment. The posterior roots from the second lumbar segment to the middle of the sacral cord were found degenerated. He considered the lesions of the posterior roots to be the result of mechanical causes, i.e., congestion of the cerebrospinal fluid, and suggests lumbar puncture in incomplete pressure myelitis with loss of reflexes.

4. To be continued.

McCARTHY (Philadelphia).....

MISCELLANY.

THERAPY AT FARNHAM HOUSE. By W. R. DAWSON (Dublin Journal of Medical Science, July, 1902).

During the past year seven patients were subjected to thyroid treatment. One case only, a recurrent melancholia, showed a direct benefit from small dosage. Several times when an attack had begun, five grains three times a day seemed to mitigate the symptoms and shorten the attack. A case of subacute mania got 375 grains in 6 days and made a rapid recovery, and a similar case of six months' standing received 530 grains in 9 days with prompt recovery. Both cases became very fat after the treatment. A case of climacteric melancholia with delusions was given 345 grains in 7 days without effect. Some improvement followed 160 grains in four days in a paranoiac. Slight glycosuria in one case, slight albuminuria in another, and a vomiting attack in another were the only untoward effects of the treatment. Thyroid would seem to be indicated in states with high arterial pressure, especially melancholia and stupor. On the contrary suprarenal is most useful in conditions of excitement and exaltation with low blood pressure, as in acute mania of fairly recent origin without stupor. Suprarenal was not good in a case of acute confusion with high blood pressure, no good results were obtained from the administration of 30 grains of dried gland a day for 3 days, 45 grains for 7 days, and 60 grains for over 3 weeks in a rheumatic subject with acute mania and high arterial pressure.

Erythrol tetranitrate was tried in severe high pressure cases, but in only one, a senile mania with delusions and stupor, did it seem to act well. Nitroglycerin gr. 1-50 three times a day diminished epileptic seizures after bromipin had lost its controlling influence. Bromipin acted favorably on the whole, but sometimes seemed to be depressing. Substitution of paraldehyd for bromipin was followed in 10 days by an attack of ephemerical mania such as had not occurred for three years. The attack subsided quickly under potassium bromide and ergot. Paraldehyd was of doubtful benefit in melancholia, but with potassium bromide is a good soporific and seems to increase the appetite. A convenient vehicle for this drug is glycerin and water strongly flavored with cinnamon.

W. A. BASTEDO.

Book Reviews

LES LOCALISATIONS FONCTIONNELLES DE LA CAPSULE INTERNE PAR JEAN ABADIE." Bordeaux. Imprimerie G. Gounouilhon, 1901.

The study of the finer anatomy and physiology of various portions of the internal capsule is far from being complete. The conclusions at which various writers arrived in their investigations in regard to the function of some parts of this important structure of the brain are so contradictory that any new contribution on the subject will always be of interest.

Dr. Jean Abadie's book is interesting and instructive from several standpoints. To make the subject clear he divided his work with good reason into five chapters. First of all he gives a complete historical review of the researches made in the domain of the internal capsule. We learn that Burdach (1819-26) was the first who created the name "internal capsule." The true scientific study of the subject begins with Türck (1853), but Charcot in 1872 was the first to give a detailed anatomical and physiological description of this region. It was Charcot who traced the boundary line between the pyramidal and sensory bundles in the internal capsule. A long series of writers follows. One after another investigated the function of various portions of the internal capsule and all arrived at the following subdivision: the anterior portion which is psychic, the middle which is motor, and the posterior which is sensory. Soon each of these localizations was subdivided and multiplied. Some of the last divisions proved to be incorrect and some doubtful.

In the anatomical portion of his work Abadie presents a criticism of the most important sections of the brain which give the best results for studying the internal capsule in all its aspects. They are those of Vicq d'Azyr, Pitres, Brissaud, Flechsig and Dejerine. The relative value of these sections are explicitly criticized: the advantageous and disadvantageous points are mentioned and discussed. Finally the author describes the classical anatomical division of various tracts of fibers which the internal capsule is composed of.

In the chapter on physiology the author refers to the various experiments relating to the function of the internal capsule, experiments which led to negative results until Fritsch and Hitzig in 1810 discovered the four motor centers of the cortex by means of the galvanic current. Ferrier in 1873 corroborated the existence of the cortical centers and first investigated the function of the capsular region; but under the last name he understood the white fibers, the thalamus and corpora striata. His experiments therefore did not have a direct bearing upon the capsule itself. It is only from 1877 that real work upon the physiology of the internal capsule was conducted; in France by François-Frank and Pitres, in England by Beavor and Horsley for motor function, and by Laborde, Lemoine, Sollier and Verger for sensory function. The motor portion is represented in two anterior thirds of the posterior segment of the capsule. The anterior half of it as well as the basal ganglia are not excitable. As to the sensory portion of the capsule it is only since the work of Sollier and Verger in 1898 that real conclusive experiments were conducted. Others before them speak of sensory disturbances only in regard to cortical lesions. The last two observers prove conclusively that a lesion of the excitable portion of

the internal capsule (median and posterior segments) causes an incomplete motor as well as a sensory paralysis of the opposite side of the body.

In the fourth chapter Abadie considers separately the various tracts of the internal capsule: he gives a critical review of experiments and observations made upon the pyramidal tract, the fibers coming from the knee of the capsule, the anterior portion of the capsule and finally upon the sensory portion, the existence of which is now so much disputed. As to the bundle causing hemichorea the author shows that any portion of the pyramidal tract can produce this symptom. The capsular bundle for aphasia he does not accept, but believes in dysarthria which, however, may be due to a lesion in the anterior portion of the capsule. In Chapter V the author relates 22 cases, the pathological findings of which he discusses in detail. The most interesting statement made by him is that he could not find a single case of disturbance of general sensation and special senses with a lesion strictly limited to the internal capsule.

In regard to association of motor and sensory paralysis he reports cases in which other portions were affected except the posterior third, also cases with total hemianesthesia of the Türck-Charcot type, while the lesion was at the apex of the lenticular nucleus.

In conclusion the author expresses a doubt in regard to the function of some portions of the internal capsule, but speaks with emphasis of the constant association of motor and sensory paralysis. According to him there is no distinct bundle in the internal capsule, a lesion of which would cause hemianesthesia without an accompanying motor paralysis.

The book is very useful for its impartial and clear exposé of different views held by prominent neurologists upon one of the most important subjects of cerebral physiology.

ALFRED GORDON.

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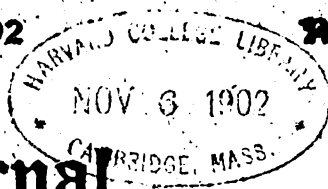
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PARADOXICAL PSEUDO-HYPERTROPHY FOLLOWING INFANTILE CEREBRAL HEMIPLEGIA.

BY L. PIERCE CLARK, M.D.

NEW YORK.

The hypertrophy of paralyzed parts in infantile cerebral palsy is a rare condition. No special article on the subject exists in literature, and no cases illustrative have been reported in America, although several observers, such as Sachs, Peterson and Osler have made diligent search for them. The different degrees of muscular and bone atrophy in spinal palsy of children have been well studied and satisfactorily explained on a basis of a disturbance in the trophic center of the anterior horns of the cord, the site of the destructive palsy lesion. Notwithstanding the almost uniform presence of atrophy in spinal palsies (acute anterior poliomyelitis) Sellegmuller has described a bony elongation in spinal palsies, and Dejerine claims to have demonstrated in such cases true fiber hypertrophy in those muscles totally paralyzed. Joffroy and Achard have also proven the truth of Dejerine's position in spinal palsy cases, even 40 or 50 years after the original onset of the lesion. However well the positive exclusion of a few nerve cells from the destructive lesion in the cord might satisfy the hypothesis that by their overaction fiber hypertrophy might occur, no such explanation could be urged for the hypertrophic condition found in cerebral palsy cases, as there are no trophic centers in the brain as such. If such

functions are exercised by the brain they must be through muscular movements represented in the cortex. A normal musculature in cerebral palsy cases is common and easily explained on the theory of a slight or transitory brain involvement and intact anterior horn cells of the cord, but the case assumes perplexing aspects in the extreme when actual hypertrophy of paralyzed parts occurs after the initial paralytic stroke.

Brief Historical Review—The voluminous literature of infantile cerebral palsy deals largely with the condition while the patients are still in infancy, and as hypertrophy probably requires some years for its development we cannot expect to note many recorded cases. Moreover, but 30% to 50% of essential palsies develop epilepsy, therefore less than one-half of adult cases come under careful observation, and then too for epileptiform attacks usually. The existence of the latter symptoms often fails to excite the clinician's attention to the initial organic mischief, as hopes of ameliorating a lesion so long existent are not often entertained. Then, too, most cases of hypertrophy are found in literature on athetosis, notwithstanding in the twelve recorded cases (five my own) but eight had athetosis.

In the pioneer study of hypertrophy in athetosis, Hammond in 1871 describes no case dating from infantile cerebral palsy or from childhood even. Clay and Shaw also failed to find hypertrophy in his careful study of choretic paresis in 1873, but Bernhardt has the honor of describing the first case in 1876, the same year in which Gowers also reports a case, or possibly two, although the occurrence of the second is doubtful. In 1878 Oulmont, in a thesis on athetosis, includes one case of hypertrophy, and Goudard described one case in 1884 in a general article upon cerebral palsies in children. In an extensive article on athetosis, Berger in 1885 stated that a small percentage of adult athetosis show the state of hypertrophy, which he believed to be an inexplicable freak of pathology. In 1891 Schieber reported an interesting and minutely-described case, and Kaiser, in 1897, recorded a unique case of marked hypertrophy of muscles and bone, complicated by myotonia. The

chronological order of the cases of hypertrophy on record, including three reported for the first time in this paper, are as follows: 1876, Bernhardt, 2, athetosis present; 1876, Gowers, 1, athetosis present; 1878, Oulmont, 1, athetosis present; 1884, Goudard, 1, athetosis present; 1891, Schieber, 1, athetosis present; 1897, Kaiser, 1, athetosis present; 1900, Clark, 2, athetosis and epilepsy present in one; epilepsy without athetosis present in the other; 1902, Clark, 3, epilepsy present in all without athetosis.

The family history of the hypertrophic form of infantile cerebral palsy presents no marked neuropathy, although in cases reported by Bernhardt, Schieber, Kaiser and myself, convulsive disorders such as epilepsy, tic disease and chorea were found in the collateral family stock.

The intra-uterine life of the patient has proven uneventful in all cases except some slight and insignificant emotional disturbance in the mother. Labor has always been at term and no evidence of trauma or severe asphyxiation has been found to exist. Instrumental delivery was practiced in two cases, but no injury resulted. All the children were healthy until the time of the stroke, except in two who developed infantile eclampsia at dentition. The cases of hypertrophy are equally divided between the two sexes. The age of onset of the paralytic stroke in cases in which hypertrophy developed later ranges as follows: two at 18 months; three at four years; three at six years; three at seven years; one at fourteen years; an average of six years of age, considerably later than in ordinary palsy cases (under 3 1-2). The causes ascribed for the palsy in the 12 cases have been: four, scarlet fever, or its sequela; two, errors of dentition; and in six none, as in ordinary palsy cases. The immediate excitant to the stroke in all cases was too trivial for consideration.

Usually the more important symptoms of the onset of cerebral palsy have been absent in the hypertrophic cases, but in all of mine there were more or less severe convulsions, vomiting, fever and physical prostration. In two cases reported by Bernhardt and Kaiser the palsy occurred without apparent knowledge of it on the part of the patient. The

presence of palsy was manifest on awakening in the morning. Usually there was considerable prostration following

Case I. E. P., paradoxical pseudo-hypertrophy in infantile cerebral palsy. Relative enlargement of right shoulder, arm and thigh. Right arm (paralyzed) at biceps 3-4 inches larger than left or well side. Left handed. Epilepsy (partial) and athetosis.

the stroke and the patients were bed-ridden for several days, weeks or months. The preferment of the hemiplegia for the right or left side is relatively the same as that for ordinary

palsy (7 to 5) in favor of the right side. The extent of paralysis has always been hemiplegic. The leg and face recover

Case II. F. W., paradoxical pseudo-hypertrophy in infantile cerebral palsy. Relative enlargement of entire right side, including face. Hypertrophy most marked in right arm 3-4 inch. Deltoid and biceps most hypertrophic. Epilepsy (partial) but no athetosis. Left handed.

most rapidly and completely, as is usual in ordinary palsy cases (a few days to several weeks). Athetosis was present in eight cases; its onset occurred on or before the patient re-

covered from the prostration of the stroke (choreic paresis) but in the two cases reported by Schieber and Gowers, athe-

Case III. J. P., paradoxical pseudo-hypertrophy in infantile cerebral palsy. Relative enlargement of left shoulder and arm (paralyzed); arm and left shoulder 1-2 in. larger. Muscles hypertrophic; deltoid, biceps and triceps. Forearm and lower extremity of the same side markedly atrophic (1-2 to 1 in.). Epilepsy (partial) but no athetosis; right handed.

tosis occurred in the one five weeks after the cerebral lesion, while in the other it developed one year after the stroke (post-

hemiplegic athetosis). The character of the spontaneous movements are generally described as typical of Hammond's

Case V. A. V., paradoxical pseudo hypertrophy in infantile cerebral palsy. Relative enlargement of left arm (hemiplegic side) 1-4 in.; hypertrophy confined mostly to biceps. Atrophy of forearm and lower extremity of left (paralyzed) side (1-2 to 1 1-2 in.). Epilepsy (partial) but no athetosis; hight handed.

athetosis (post-hemiplegic athetosis or chorea), but frequently it resembles choreic paresis (fibrillary chorea); the associ-

ation of the two forms are often seen in the same case. The movements are most marked in the forearm and shoulder muscles. In about one-half the cases the lower extremity engages in the athetosis in a minor degree, although in Bernhardt's second case the leg alone was the seat of athetosis and hypertrophy. The athetosis ceases usually in a position of rest or while asleep. Voluntary effort at control may decrease the movements, rarely it increases; voluntary acts bring on increased athetotic movements. The posture of the arm is usually that of partial rest with hand pressed against the side and elbow slightly extended, although the posture and movements, as in essential athetosis, may vary greatly.

The mental state of the patients on the whole is better than usually obtains in ordinary palsy cases. While the intellectual element as such is quite lacking, the patients exhibit considerable ability in learning industrial pursuits. Those cases in which athetosis exists and those in which it does not occur are about equal in ability to undertake trades. Possibly the non-athetotic are slightly duller students, but this defect offsets the physical agitation of the affected parts in the athetotic class.

The length of time necessary to produce the hypertrophy is obviously difficult to ascertain, but the time elapsing between the palsy lesion and the detection of the hypertrophy has been very variable, from 8 to 29 years, the average being 16 years. The age of the patients at the time the hypertrophy has been recognized ranges from 12 to 36 years, the average being 22 years. The hypertrophy may involve any and all parts that are paralyzed, even the breast and testicles may enlarge. The skin, muscles and fat may all hypertrophy in a single case, although some degree of muscle hypertrophy is uniformly present in every case. The enlargement has had its seat in the upper extremity in every instance except in Bernhardt's second case, where the leg was hypertrophic. The arm has shown most enlargement in nine cases, the forearm in two and the calf in one. The muscles most frequently hypertrophied are found in the following order of occurrence: biceps, deltoid and triceps.

The parts not hypertrophic follow the general law for atro-

phies in ordinary cerebral palsy cases. The hypertrophied tissues have not been studied carefully from the histological standpoint in any cases except in two of our own; in these true fiber hypertrophy existed. An enlargement and increase in the number of the muscle spindles was found; usually hypertrophy and hyperplasia went hand in hand. No doubt many of the reported cases of enlargement of an extremity should be classed as fat hypertrophy, as noted in a case by Gibatteau, a fact also known to Cazauvielh. In such cases the excessive fat appears to be compensatory for the muscular atrophy, as has been shown in poliomyelitis (Freud). Our suspicions are further strengthened inasmuch as the hypertrophic extremity is without exception relatively weaker than its opposite on the healthy side (pseudo-muscular hypertrophy). Too much stress, however, should not be laid on this fact, as the contractile power of any muscle in different individuals is not always in definite ratio to its volume. The difficulties of examining excised muscular tissue for fiber hypertrophy, either from the living or dead subject, have been well emphasized by Batten, Spencer and Gowers. In most cases the skin and fatty tissue have shown hyperplasia of their essential elements¹.

Bony hypertrophy was first actually proven by me in one of my cases (1899) by X-ray examination, and still more recently Lannois and Fayolle have reported the same results by the same method. The bones of the entire upper extremity may be hypertrophic, although the bones usually found enlarged are those corresponding to the hypertrophic soft parts which they underlie. The degree of circumferential enlargement of the hypertrophic extremity varies from 1-4 to 7-8 in., although not usually more than 1-2 inch. As to the cause of the condition. In the first eight cases athetosis was found, being most marked in parts hypertrophic, it was therefore logically inferred that the condition was due to the violence of the spontaneous movements.

I have, however, reported four cases of paradoxical hypertrophy in which no athetosis has ever existed, but in which

¹A detailed histo-pathological report of the excised hypertrophic tissues is in preparation.

a severe partial epilepsy was present instead.² If the palsy lesion is slight or transient, the nutrition and integrity of the cortical elements remain more or less intact³, and a post-hemiplegic disorder of motility, such as athetosis or a focal epilepsy, produces in time a hypertrophic condition. The essential factor is the extent and character of the cortical injury, otherwise we would find hypertrophy with every case of choreic paresis or partial epilepsy following palsy lesions. Indeed, extreme atrophy most frequently occurs after choreic paresis or focal epilepsy of hemiplegics. Therefore the association of the peculiar cortical lesion with some degree of post-hemiplegic disorder of motility in parts once paralyzed causes in time the paradoxical pseudo-hypertrophy.

REPORT OF THREE CASES OF PARADOXICAL PSEUDO-HYPERTROPHY
IN INFANTILE CEREBRAL HEMIPLEGIA.

Case III. J. P., female; aged twenty-four years, maternal grandfather had chronic rheumatism and was alcoholic. Paternal aunt had idiopathic epilepsy which developed at the menopause. Patient is second in line of birth. The mother had one miscarriage and died of paralysis at fifty-eight years. Pregnancy and labor were normal. There was no paralysis or injury of child at the time of birth. As soon as the patient was able to get about she developed a depraved taste for plaster, clay, muddy water, etc. At 18 months old, during difficult dentition she had a series of convulsions which lasted 12 hours, immediately after which complete left hemiplegia was noted. Nine months from the onset of the hemiplegia the fingers of the left hand developed "cramping spasms" without loss of consciousness, at the time patient commenced to use the left side learning over again how to creep and walk. One year after the hemiplegia she had "falling attacks," attended by a sudden twitching in all the muscles of the left side, during which consciousness was frequently preserved. Patient is feeble-minded; has never attended school but can read and write. The epilepsy probably dates from the hemiplegia, although typical grand mal did not develop until she was 13 years old, during a period of severe menstruation. A sensory aura of numbness on the left side precedes attack. The seizures consist of tonic and clonic convulsions which begin and end on the left (paralyzed) side.

²The epilepsy may also be superimposed upon an athetosis, as in case E. P. of our series.

³It is well known also that partial epilepsy and athetosis most frequently occur after slight and transient lesions of the cortex.

as in ordinary spasmodic hemiplegia. Aside from the order of beginning and ending and the abbreviation of the post-paroxysmal stertor, the seizures are typical grand mal in character. The patient also has frequent petit mal, which usually occurs in the morning before rising. The attacks consist of "writhing movements" of the extremities, in which the body and limbs are "thrown in every direction." Grand mal attacks are infrequent (2 or 3 a month), while petit mal attacks occur every three or four days. She has had 25 grand mal attacks in 24 hours. Knee-jerks are exaggerated on the left side and there is considerable loss of power in the left arm and leg. The tongue is deviated to the right on protrusion. Weight 100 lbs., height 5 ft. 2 3-8 in., circumference of left arm (paralyzed) is 1-2 in. larger at biceps than that of the right, while the left forearm is 1-4 in. larger than the right. There is no athetosis or disorder of motility other than the epilepsy in hypertrophic parts and the left face and leg are atrophic. The condition of the hypertrophy is well shown in Fig. III. The measurements are as follows:

| | Right | Left |
|--|------------|------------|
| Dynamometric test | 44 | 22 |
| Length from acromion process to external condyle | 11 in. | 11 in. |
| Length of internal condyle of humerus to the styloid process of ulna.... | 9 1-2 in. | 9 1-2 in. |
| External condyle to styloid process of radius | 9 1-4 in. | 9 1-4 in. |
| Circumference of arm, arm flexed on forearm at right angles | 9 in. | 9 1-2 in.* |
| Largest part of forearm in its anatomical position | 7 3-4 in. | 8 in. |
| Circumference of hand at metacarpophalangeal articulation | 7 in. | 7 in. |
| Length of index finger | 3 7-16 in. | 3 7-16 in. |
| Length of second finger..... | 4 in. | 4 in. |
| Length of thumb | 2 1-2 in. | 2 1-2 in. |
| Circumference of middle finger at middle part of first phalanx..... | 2 in. | 2 in. |
| Circumference of thigh at gluteal fold.. | 20 3-4 in. | 20 in.* |
| Circumference at popliteal..... | 12 in. | 11 1-2 in. |
| Circumference of leg at calf | 12 1-2 in. | 11 1-4 in. |
| Dorso-plantar circumference..... | 8 in. | 8 in. |
| Circumference of wrist | 5 1-2 in. | 5 1-2 in. |
| Circumference of ankle | 7 1-2 in. | 7 1-2 in. |
| Length from ant. sup. spinous process to int. malleolus.... | 31 in. | 30 in. |

Case IV. A. B., male, aged twenty-three years. Father is intemperate, mother had periodic facial neuralgia and epilepsy; she died from puerperal eclampsia at my patient's birth. Pregnancy and labor were normal in all respects. Patient is the youngest in a family of seven; all the patient's brothers and sisters are well. He always had migraine until his epilepsy began at 14; at this latter age complete left hemiplegia occurred, which was supposed to have been caused by over-eating. He had convulsions during the stroke and was prostrated for several months from the physical exhaustion. The left side participates most in the classic grand mal epilepsy which occurs frequently in such cases. The vaso-motor disorders which occur ordinarily in palsy cases are found here also. Although the patient is able to do considerable work with the left hand, there is, nevertheless, a temporarily increased weakness in the left side after convulsions (exhaustion paralysis). Some permanent contractures exist in the flexors of the fingers. No athetotic movements have ever occurred. The power in the paralyzed parts is greater than on the sound side; all reflexes on the left side are exaggerated; dynamometric test shows: left, 48; right, 44. Weight is 136 pounds; height, 5 ft. 3 in. The left arm at the biceps is hypertrophied, the enlargement is 1-4 in. more on the paralyzed side. The remainder of the left side is atrophic.*

Case V. A. V., female, aged 36. One maternal aunt was tubercular; another maternal aunt died of epilepsy, and a maternal cousin also died insane. Both parents are very neurotic; the mother still has periodic attacks of neuralgia. The father had epilepsy from "18 months until five years old." A sister of our patient had convulsions at dentition at two, and after a respite of ten years epileptic convulsions began at twelve. She finally died of epilepsy at twenty-seven years of age.

Our patient was born a healthful child at full term. She was, nevertheless, a very "restless and irritable" child. She had scrofula, pertussis and measles. At seven years of age she had scarlet fever, which was followed by nephritis. A few days after the renal complication she had repeated convulsions, high fever and vomiting, which symptoms were followed by a comatose period for an hour. On return to consciousness the entire left side was found paralyzed. Epileptiform attacks began at once. At first the attacks existed as slight "fainting spells" in which the patient fell to the left if standing or sitting.

*Owing to the patient having passed from our observation after the first examination, we have not been able to furnish a more complete history or a pictorial reproduction of the case.

After a period of five years of hemispastic seizures, classic grand mal developed with the order of invasion and ending in the muscles of the paralyzed side. A sensation of heat rising from the feet to the head constitutes the aura. She has had ten seizures in twenty-four hours; she now averages one attack a month. No athetosis has ever existed in this case. The muscles of the left arm are hypertrophic, the biceps is most hypertrophic, as is well shown on page 647. As the biceps forms almost the entire hypertrophy of the left arm, the relative enlargement in this case, although but 1-4 in., appears much greater than in J. P., in which it was 1-2 in. All the tendon reflexes are much exaggerated on the left side. Weight, 120 1-2 pounds; height 4 ft. 1 3-4 in.; asymmetry of face, palate and cranium, which are development errors due to the hemiplegia rather than stigmata of degeneration, as ordinarily understood. The measurements of the case are as follows:

| | Right | Left |
|---|------------|-------------|
| Dynamometric test..... | 52 | 19.5 |
| Length from acromion process to external condyle | 10 3-4 in. | 10 3-4 in. |
| Length internal condyle of humerus to the styloid process of ulna | 9 1-2 in. | 9 1-2 in. |
| External condyle to styloid process of radius | 9 1-2 in. | 9 1-2 in. |
| Circum. of arm, arm flexed on forearm at right angle | 10 3-4 in. | 11 in.* |
| Largest part of forearm in its anatomical position | 8 3-4 in. | 8 3-4 in. |
| Circum. of hand at metacarpo-phalangeal articulations | 7 1-4 in. | 6 1-2 in. |
| Length of index finger | 3 9-16 in. | 3 5-16 in. |
| Length of second finger | 4 in. | 3 7-8 in. |
| Length of thumb | 2 1-2 in. | 2 5-16 in. |
| Circum. of middle finger at middle part of first phalanx | 2 1-4 in. | 2 3-16 in. |
| Thigh at gluteal fold | 22 in. | 21 in. |
| Circum. prosstital space | 14 1-4 in. | 14 3-16 in. |
| Circum. of leg at calf | 13 1-2 in. | 12 1-4 in. |
| Dorso-plantar circum..... | 8 1-2 in. | 8 7-16 in. |
| Circum. of wrist | 6 in. | 5 7-8 in. |
| Circum. of ankle | 7 7-8 in. | 7 3-4 in. |
| Length of ant. sup. spinous process to int. malleolus..... | 31 in. | 31 in. |

The following is an abstract of the two cases I have previously reported⁴.

Case I. E. P., female, age twenty-three years; neurotic history. Although she was born a healthy child at term, labor was difficult and was finished by instruments. She walked at two and had no serious illness until six, when she had severe and prolonged convulsions for 24 to 36 hours. This left the right side completely hemiplegic. Epileptiform crises developed at once and have occurred every two or three days since. They are grand mal, involving the right side first and most. She is feeble-minded. Marked athetosis exists, being most marked in the right arm. The presence of athetosis dates from the day of the stroke. The deep reflexes on the right side are all exaggerated. The following measurements and Fig. I. show well the hypertrophy in this case:

| | Right | Left |
|---|------------|------------|
| Weight, 138 lbs., Height, 5 ft. 3 3-4 in. | | |
| Dynamometric test..... | 33 | 60 |
| Length from acromion process to external condyle | 12 in. | 12 1-2 in. |
| Length internal condyle of humerus to the styloid process of ulna | 9 1-2 in. | 9 1-2 in. |
| External condyle to styloid process of radius | 10 in. | 9 1-2 in. |
| Circumference of arm; arm flexed on forearm at right angles | 10 1-4 in. | 9 1-2 in. |
| Largest part of forearm in its anatomical position. | 9 1-4 in. | 8 3-4 in. |
| Circumference of hand at metacarpophalangeal articulation | 7 7-16 in. | 7 1-2 in. |
| Length of index finger..... | 3 5-8 in. | 3 1-2 in. |
| Length of second finger | 4 1-2 in. | 4 in. |
| Length of thumb | 2 5-8 in. | 2 1-4 in. |
| Circumference of middle finger at middle part of first phalanx | 2 1-4 in. | 2 5-8 in. |
| Circumference of thigh at gluteal fold. | 20 1-2 in. | 20 1-4 in. |
| Circumference popliteal space | 14 1-4 in. | 14 in. |
| Circumference of leg at calf | 13 3-8 in. | 13 1-2 in. |
| Dorso-plantar circumference | 8 1-2 in. | 8 1-2 in. |
| Circumference of wrist | 6 in. | 5 7-8 in. |
| Circumference of ankle | 7 7-8 in. | 7 7-8 in. |
| Length from ant. sup. spinous process to int. malleolus of ankle | 32 3-4 in. | 33 in. |

⁴Archives of Neurology and Psychopathology, Vol. 2, Nos. 2 and 3, 1899.

Case II. F. W., female, aged twenty-five years; neurotic family history. Although patient was born a healthy child at term, labor was difficult and instrumental, it being a breach presentation. At two years of age during difficult dentition she had a series of convulsions which left the right side hemiplegic. Epileptiform crises followed the palsy lesion at once. They were convulsive and confined to the right side at first; later they became general, with a right side order of invasion. Patient is feeble-minded, but able to do considerable housework. The whole right side, including the face, is hypertrophic; the bones also enter into the enlargement as shown by skiagraphs in the original publication of the case. Mild scleroderma and Raynaud's disease are also associated in this case. The following measurements and Fig. II. show the hypertrophic state of the hemiplegic parts:

| | Right | Left. |
|---|------------|------------|
| Weight, 108 lbs., height 4 ft. 11 3-4 in. | | |
| Dynamometer | 46 | 50 |
| Dynamometer (average) of twelve tests | 42 1-2 in. | 48 2-3 in. |
| Length from the acromion process to tip of middle finger | 26 1-2 in. | 26 1-2 in. |
| Circumference of biceps (forearm at right angles to arm)..... | 10 1-2 in. | 9 3-4 in. |
| Circumference below bent elbow (forearm at L) | 10 in. | 9 1-4 in. |
| Circumference at wrist | 6 1-2 in. | 5 3-4 in. |
| Circumference behind knuckles | 7 1-2 in. | 7 1-4 in. |
| Length of middle finger | 4 in. | 4 in. |
| Length of humerus (acromion to ext. condyle; arm bent at L) | 11 in. | 11 1-2 in. |
| Olecranon to styloid process (ulnar side) | 9 1-4 in. | 9 1-4 in. |
| Circumference at gluteal fold | 19 1-4 in. | 19 in. |
| Anterior superior spine to internal malleolus..... | 31 in. | 30 1-2 in. |
| IN RECUMBENT POSITION. | | |
| Circumference above knee | 13 1-2 in. | 13 1-2 in. |
| Circumference of calf | 13 1-2 in. | 13 in. |
| Circumference above ankle | 7 1-2 in. | 7 1-2 in. |
| Circumference of arch of foot | 8 in. | 7 7-8 in. |

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TREATMENT BY THE TOURNIQUET TO COUNTERACT THE VASOMOTOR SPASM OF RAYNAUD'S DISEASE.

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I have been privileged by Dr. Osler to report from his clinic the following case. The object of doing so is to call attention to a form of treatment that apparently proved beneficial in relieving a cycle of vasomotor overaction which in this particular instance had provoked a painful and protracted condition of "local asphyxia" of the four extremities.

Since Raynaud's final contribution in 1874¹ to the subject of the disease bearing his name there has been no particular advance in our knowledge of the physiological or pathological states underlying it. Its physiological basis seems to rest on the overaction in constriction of the arterioles of certain vascular territories. This overaction may be brought about by slight peripheral stimuli, which only under the abnormal conditions of the malady could produce reflexly such an exaggeration of the customary vaso-constrictor response. Thus a minimal lowering of the surface temperature for example may suffice in some cases to inaugurate an attack characterized by one type or another of the symptoms assumed by the disease. In order to account for the characteristically symmetrical nature of the vascular disturbance so often observed, Raynaud was led to believe in the existence of a lesion or state of overexcitability of the vasomotor centers themselves.²

Presumably the same fundamental condition, whatever it may be, is responsible—through variations in the intensity of its

¹Archives générales de médecine T. I., Jan., 1874. Trans. by Barlow, New Sydenham Soc., 1888.

²"New Researches on the Nature and Treatment of Local Asphyxia of the Extremities," *loc. cit.* p. 182. "To sum up in a more definite form, I would say that in the present state of our knowledge local asphyxia of the extremities ought to be considered as a neurosis characterized by enormous exaggeration of the excito-motor energy of the gray parts of the spinal cord which control the vasomotor innervation."

action—for the three well known gradations in severity of symptoms: the “local syncope” (Raynaud) with exsanguinated tissues: the “local asphyxia” from venous stasis, and finally the thrombosis and gangrene, representing the terminal feature of the vascular spasm in case the latter is sufficiently severe or prolonged in its action.

The opportunities offered for a post-mortem study of the disease have been rare and the information gained has been scant and unreliable. No change in the nervous system or in the blood vessels has been demonstrated in typical and uncomplicated cases. There is no endarteritis such as occasions the somewhat similar gangrenous processes in the senile; no change demonstrable in the nerves as in cases of symmetrical gangrene associated with peripheral neuritis. Cases of chilblains, frost-bite and instances of ergot poisoning with prolonged constriction of arterioles leading to anemia, asphyxia and death of the extremities possibly present points of nearest resemblance to the conditions presented in Raynaud’s disease.

Forty years have passed since the appearance of Raynaud’s original thesis, and yet with the exception of one or two new points in symptomatology, our understanding of the malady remains where he left it. Barlow, in his recent chapter in Allbutt’s System, says: “The earliest explanation of this pathological habit appears to be Raynaud’s hypothesis; namely, the vasomotor center or centers are unduly irritable, that the commonest irritant is from the periphery, for example, cold; and that the different impulses from the center lead to the paroxysmal contraction of arterioles.”

The suggestion that the application of a tourniquet to an extremity, early in the course of a period of arterial spasm, might temporarily throw out of action the nerves controlling the peripheral vasomotor mechanism and thus interrupt the syncopal attack, was based purely on this theory of physiological overaction of the neuro-vascular apparatus.

The removal of a tourniquet or Esmarch bandage, which has been applied to an extremity for operative purposes, is invariably followed by a flushing of the member, peripheral to the site of constriction, with bright arterial blood. From the

embarrassment often occasioned thereby, this is a circumstance with which an operator is but too well acquainted.

This active hyperemia with increased surface temperature presumably is due to the temporary paralysis of vasomotor control to the part below the encircling bandage. Whether the pressure of the tourniquet produces a local compression paralysis or whether the resultant anemia throws the terminals of the vasomotor apparatus out of gear, it is impossible to say, but it suffices that the non-medullated fibers are "blocked" in consequence of the constriction by a more moderate and shorter application than is necessary to throw out of function those fibers conveying sensation and motion. Familiarity with the vasodilatation occurring under these circumstances naturally suggested the employment of a similar procedure as a therapeutic measure to counteract the local conditions of spasm characterizing the disease in question.

In the particular patient in whom this treatment was first instituted the symptoms were severe, the arterial spasm was pronounced and was associated with great pain. For several months a condition of local asphyxia of all the digits had been present with exacerbations of almost daily occurrence. On several occasions these attacks were so severe that slight superficial patches of terminal gangrene had affected the pads on one or more of the toes or fingers. The healing after this loss of substance had left most of the finger-tips tapering and firm. With the idea of interrupting the vaso-constrictor control over the individual digits as they became most actively involved, it was thought possible that cocaineization of the lateral nerves might block the transmission of vasomotor as well as other nervous impulses and thus check the process.* This, however, was not tried as the tourniquet apparently accomplished the same purpose and controlled a wider vascular field. As is rather unusual the arterial spasm in this case extended far enough up the extremity to render the radial artery at times unpalpable at the wrist.

*It is not impossible that a subarachnoid cocaineization via the lumbar meninges might serve the purpose of abruptly throwing out of action the spinal vasomotor centers in these cases.

The history of the case is as follows :

The patient, Mrs. ———, 35 years of age, entered Dr. Osler's service October 29, 1900, complaining of "blueness and pains in the extremities." Her history, taken by Dr. Cole, shows no hereditary predisposition nor associated or previous illness, malaria, lues, diabetes, etc., which might have borne some relation to her present trouble.

She was never a strong child. She had scarlet fever, two attacks of diphtheria and other infantile infections. She suffered frequently during her early years from pains in her joints, usually worse during cold or damp weather. These pains have persisted more or less throughout her life. They have never been associated with evident articular changes nor have they been severe enough to incapacitate her for her usual duties. She has suffered also since childhood from attacks of "chilblains" which never required severe cold for their incitement. From this she has suffered every winter, though with advancing years there has been no especial increase in the severity of the attacks. She says that during the attacks the toes or fingers would become "red and swollen and would itch and burn."

She was married at 24 and became the mother of two children. Following the birth of one of them she was invalided for several months as the result of a severe infection. Her catamenial history is irregular. She suffers from frequent attacks of indigestion and vomiting which seem to bear no relation to indiscretions of diet. She has been more or less of an invalid for the past six years.

Although presumably akin to her former mild winter attacks, she dates the onset of her present serious trouble from March, 1901, several months before her admission to the hospital. Shortly after an attack of la grippe she began to be troubled with burning and itching of the legs and feet. One leg she says became red and swollen though the symptoms were most pronounced in the feet and toes. An upright position aggravated the condition and recumbancy became necessary. After a week or ten days the symptoms became associated with the extreme burning pain characteristic of cases of "local asphyxia."

In a more or less aggravated form, the arms and hands also having become affected, these symptoms had persisted uninfluenced by treatment during the ensuing months. There has been recourse to morphia almost daily to obtain some degree of relief from the pain and to induce sleep. On several occasions after a particularly severe exacerbation of the condition, a small, dry, brown eschar had formed on the pads of one or more fingers or toes.

She has had no symptoms referable to the viscera, to the central nervous system nor to vision.

Beyond the condition of the extremities, her physical examination was practically negative. She was a small, well nourished woman of neurotic temperament.

Dr. Osler's note on the extremities was as follows: "The hands are slightly congested, cold and moist. There is a slow return of vascularity after compression. The terminal phalanges are blue; the finger tips especially so. The fingers are tapering and the pads show dessicating epithelium and scars of old sloughs. The nails are rigid. On the outer side of the arms are scars where the skin has been involved in the last attack.

The arteries, neither radial nor brachial are palpable. Pulse is very small and feeble.

There is a general lividity of the toes and feet. The toes show a condition similar to the fingers though more advanced. There is considerable dessication of the skin, marked blueness of the tips and scars of old healed gangrenous sloughs. They are very painful and tender to manipulation. The tip of the nose is dark colored, deeply congested, but not swollen."

Blood Examination.—R.B.C., 4,800,000; W.B.C., 10,600; hemoglobin, 65 per cent.; coagulation time, one minute, twenty seconds.

Urine Examination showed nothing noteworthy. Almost daily observations over a period of two months showed no trace of hemoglobin.

With no evident amelioration, the patient's symptoms continued practically unaltered for the following two weeks. There was more or less constant discomfort with attacks of severe burning pain once or twice daily associated with blueness of the extremities. These exacerbations were only influenced by morphia. Although galvanism was not employed, the usual forms of treatment seemed to do little more than temporarily palliate the severity of the symptoms.

On November 10, during an exacerbation of pain and asphyxia chiefly affecting the left upper extremity, the flat rubber bandage was first employed as a tourniquet about the upper arm. Its application occasioned considerable local discomfort and pain referred to the side of the thorax (intercosto-humeral?). On its removal after one or two minutes' application a bright flush of the extremity followed with increase of surface temperature and a much more readily palpable radial artery. The vasomotor relaxation lasted only a short time, but the patient expressed a sensation of considerable relief. From this time seems to date the beginning of her improvement. The

tourniquet was applied daily to one or another member according as the symptoms indicated. The local discomfort which it occasioned at first was subsequently less severe or was better endured and the application finally was extended to periods of five minutes or longer. The relief to the burning pain in the fingers was so pronounced that after the first few trials the patient was not only very willing to submit to the temporary discomfort of constriction, but would call for it.

An attempt was made to apply the tourniquet as early as possible in the period of exacerbation of pain and lividity. These periods occurred, however, with such irregularity that it was difficult or impossible to anticipate and ward off the vascular spasm by applying the tourniquet as a prophylactic measure, although an endeavor was made to do so. Improvement in the circulatory condition, however, was noticed almost from the first. The patient soon ceased to require morphia to induce sleep and the attacks became less and less frequent and of decreasing severity. After two or three weeks she was able to get up and move about her room without discomfort. Exposure from cold as from driving in the open air brought on no further trouble. She left the hospital apparently quite well on December 28, having gained ten pounds in weight, and having had for the preceding two weeks no recurrence of her distressing symptoms. The extremities at this time had resumed their original physiological tint.

During the patient's residence in the hospital while the recurring spasms with pain and lividity of the extremities were still severe, careful observations on the blood pressure were made by Drs. Cole and Erlanger. They failed, however, to demonstrate any characteristic rise in the general arterial tension other than that which could be accounted for by pain. It is probable that the vascular territories subjected to the vasoconstrictor action at any one time were too circumscribed to occasion a rise in the general blood pressure of any significance. A corresponding constriction of the splanchnic field would have produced a tremendous rise in arterial tension. A "local asphyxia" of the splanchnic venous system on the other hand, corresponding to the degree of stasis in the extremities, would have brought about a great fall in blood pressure. Apparently in this case, as heretofore stated, there were no circulatory disturbances referable to the viscera or central nervous system.

For the remainder of the winter months, following her discharge from the hospital, the patient remained free from symptoms and was able to resume her household duties with enjoyment. On one occasion in the spring, after fatigue and expos-

ure to cold, she was threatened with a recurrence of the trouble. Once more her hands became livid in color and so painful that her attending physician administered morphia, but without giving her any relief. Recourse was made once more to the tourniquet with immediate improvement in the condition, and after a few applications the dreaded symptoms entirely disappeared. Since then up to the present writing she has had no return of trouble.

Galvanism in one form or another has proved of most benefit in the treatment of these conditions. This form of therapy is strongly advocated by Raynaud in his second essay, in which striking examples of improvement under its employment are cited. The rationale of the treatment depends upon the supposed relaxation of the overacting vasomotor centers in the cord consequent upon the passage of the electrical current.

The treatment by the tourniquet is most simple of application and from its apparent success in this instance may be possibly deserving of further trial. It depends seemingly in principle upon the physiological "blocking" effect of the elastic constriction on the peripheral vasomotor nerves. This temporary interruption of function allows the terminal arterioles to completely relax and a state of arterial hyperemia to take the place of the local asphyxia which has resulted from the pre-existing spasm. If employed early enough or repeated with sufficient frequency, as this case suggests, the hyper-excitability of the center, if that is the underlying cause of the spasm, either subsides or else, and what is more probable, the local vascular conditions in the extremities become so altered by the periods of active circulation that slight peripheral stimuli no longer provoke the intense reflex constrictor responses.

The treatment, of course, has its limitations, and is not applicable to a case where vascular spasm affects territories other than those confined to the limbs.

THE HISTORY OF THREE CASES OF PECULIAR MOTOR MANIFESTATIONS IN THE INSANE.¹

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These cases are reported as illustrating the bizarre and extreme manifestations of motor disturbance as they occur among the insane. They practically never have an organic basis; and although they frequently seem to have a focal origin; yet, even when recovery does not take place, and the patient dies, we have, so far, never found any evidence of a focal lesion.

Our experience with the motor disturbances associated with insanity, and especially those degenerative forms: disseminated cerebro-spinal sclerosis, the ascending form of general paralysis, and hereditary chorea: which link disease of the brain with that of the general nervous system; suggests the possibility that nervous disease independent of insanity may be due to like causes, operating in a more limited field, and resulting from a more definite reduction of potentiality, or exhaustion of capacity. In other words; that the diseases of the bulbo-spinal nervous system, are not so much specific conditions, as they are the sequence of slowly or rapidly developed degenerative change in certain parts of a congenitally defective structure, in which the capacity in these parts was limited; so that a sufficient strain, overuse, or disease, would set up a process of decay which would be progressive. It is interesting to note in this connection that we not infrequently see, among the insane, almost every form of focal disease imitated by the effect of chronic uremic poisoning upon the general nervous system; and some of these effects persist during the life of the patient.

G. Z., German, married, a farm hand, 43 years old, 5 feet 10 inches high, eyes blue, and hair brown. Had recently come to America, and no history of his past life or heredity could be

¹Read at annual meeting of the American Neurological Association, June 5, 6 and 7, 1902.

obtained. It was stated, however, that he was "partly insane" when he came to America. He was brought to the hospital because he had persecutory ideas, feared personal injury; and was disposed to be violent toward his family and neighbors.

He was in good physical health apparently, had a good appetite, and slept well. He appeared to be intelligent, had good manners, spoke fluently in his own language, and gave evidence of a fair degree of education. At first he was very much disturbed, suspicious of every one, and in constant fear of personal injury. He was either dull and indifferent, or disturbed and agitated; and when in the latter condition complained of constant dull headache, and said that he did not sleep well. However, he took part in the regular occupations of the ward, and also went out walking. After he had been in the hospital for about two months, during a period of unusual depression and agitation, he ran away; but was found the next day hiding in an old farm house. He said he feared he was to be "killed;" begged that he might be "shot and not tortured;" also that his "sentence" might be "commuted to life imprisonment." The headache was worse at this time, and he developed an angioneurotic edema in the left forearm. His physical condition exaggerated his morbid self-consciousness and depreciatory ideas; so that everything in his surroundings was pregnant with suggestion. He was too confused to recognize any well-defined expressions of hostility from those about him, although there was evident auditory hallucination; which, associated with some untoward experience in his past life, suggested the persecutory ideas which dominated his active consciousness and filled him with dread and fear. During this time, however, he took plenty of food, and when he was at work was apparently comfortable. He did not sleep well, however, and grew more depressed; careless and indifferent with regard to his clothing and appearance, and took no interest in his surroundings. During the next month he took on flesh very rapidly, became more stupid and indifferent, his face expressionless, and he did not answer when spoken to; although he apparently understood what was said to him. It was noted at this time that there was some paresis of the muscles of the left forearm, and general paresis; in so far as to make him awkward in his movements, so that he stumbled in walking and was unable to work. In the early part of the next month he began to complain of being unable to see well with his right eye. One week later he could not see well with either eye, and could not read. Shortly after this he was found, soon after going to bed, to be in a tonic convulsion, apparently involving all of the voluntary muscles. He remained rigid for more than an hour, was

completely anesthetic, but apparently fully conscious. The next morning there was marked evidence of paresis on the left side, including the face. He could move about, but was very awkward. The motor symptoms disappeared gradually during the next month, but he had occasional convulsive seizures, which were always tonic. He lost in weight and strength, took little food, and was apparently neither able to work nor read.

Up to this time he had always conversed intelligently on subjects with which he was familiar, but now he became incoherent. He was kept in bed on account of his physical condition, and because he complained of pains in various parts of the body. There was no tenderness nor soreness, however; and during the day, when not watched, he would get out of bed, stand in a corner of the room, and watch furtively, as if he feared to be attacked.

There was no marked variation in his mental condition during the next month, and his persecutory ideas persisted. Toward the latter part of the month he had another convulsion lasting several hours, and the muscles of the jaw remained rigid for four days. During this convulsion, and afterward, he was apparently insensible; respiration became very rapid, the rate reaching as high as 60. During this time only the left side of the chest expanded. There was no cyanosis. He slowly recovered his former physical condition, but still complained of various pains, especially under the eyes and in the right ear.

During the next month he had an attack of dysentery, which was epidemic in the house at the time. His illness did not affect his mental condition, but there was no return of the convulsions.

During the next two months he had occasional convulsive seizures of short duration, and gradually passed into a condition of painful stupor. The vegetative functions were performed normally, but the excretions were passed apparently unconsciously. During the latter part of the period the convulsions became irregular in their onset, and instead of simple rigidity, the body was rotated to the left, and the knees drawn up to the chin. He had at one time 20 successive convulsions within a few hours. Even when the muscles were apparently relaxed there was marked resistance to any effort to flex or extend the limbs; the condition resembling pseudo-catalepsy.

During the next month the convulsions were comparatively frequent, and of such a character as to warrant detailed description. The patient was in bed, apparently unconscious of his surroundings. The body would suddenly become rigid; respiration hurried and noisy. After a varying interval, the eyelids would begin to quiver; then the distal phalanges of the fingers and

toes would begin to move; and this movement progressed symmetrically and successively from joint to joint, until all four limbs were in motion. Then the muscles of the trunk became involved from below upward, and finally the muscles of the face. The movement was that of a violent tremor, apparently affecting all of the voluntary muscles. It subsided gradually until the tremor became fibrillary. Then there was complete relaxation. During the stage of rigidity he could be placed with the back of his neck resting on one support, his heels on another, like a trestle board; and considerable weights could be piled on his abdomen without affecting the rigidity.

During the next year there was very little variation in his condition. He remained in bed, was stupid and filthy, but took plenty of nourishment, and slept well. He also had occasional convulsions. In the latter part of the period he began to cough and expectorate. Soon after this he began to be disturbed, got out of bed, and if not watched would attack the other patients, and break windows. One day he beckoned the physician to him and told him that he had been advised to speak, and to say that he had a pain in his breast. From this time on he spoke freely and intelligently, and began to take an active interest in his surroundings.

He was weak physically, and during the next two months coughed and expectorated a great deal. His ankles became edematous also. So far as could be determined, the condition of the lungs was due to a chronic edema. There was no elevation of temperature, and no tubercle bacilli were present. By midsummer he began to improve physically, and from this time on improved steadily, both mentally and physically; until after a period of four months he was entirely well and went home. Nothing has been heard from him since.

J. B. S., German, single, 40 years old; eyes gray, hair brown; height 5 feet 8 inches, weight 147 lbs.; laborer.

Nothing could be learned of his family or personal history, except that his parents were living, in good health; but the father intemperate. The patient is said to have always been "feeble-minded," and since he reached manhood an habitual drunkard. Ten days before admission he was struck on the head with a rock. A week afterward he became disturbed, wandered about trying to hide himself; said that he feared that he would be murdered; that he saw people after him, and heard them threaten to kill him. He also complained of pain in the head and flashes of light before his eyes.

He was too much disturbed to admit of a careful physical examination. He had a good appetite, but digestion was im-

paired, and he was constipated. The urine was decreased in amount; sp. gr. 1.025; urea and chlorides reduced, but no other abnormality was apparent. The eyes were suffused, conjunctivæ congested; expression that of furtive suspicion. He was disturbed, apprehensive; sat up in bed, swaying from side to side, wringing his hands, and beating his breast. When any one came near him, he would shake his head violently, whine and snarl; shout, "Murderers, murderers, murderers, all murderers; they are going to murder me; the rich devils are after the poor man." When alone he was quiet, and with one to whom he was accustomed he would talk rationally about ordinary things. During the first forty-eight hours after his admission to the hospital he was more quiet, took nourishment freely, and slept fairly well at night. The constipation was relieved, but the urine continued scanty in amount. Any attention disturbed him. He would growl like a dog, strike himself in the face; and attempt to bite and scratch the nurse. During the periods of quiet he would say that he could not help acting as he did, because people were after him, trying to kill him. During the next week there was no material change in his condition. He slept well under the influence of hypnotics, took nourishment when given to him, and his bowels moved daily under the influence of laxatives. In the day time, however, the visual and auditory hallucinations were persistent, and the fear of personal injury ever present. There was no elevation of temperature, although the surface of the body was flushed, and the skin hot and moist. During the next two months the only change in his mental condition was a growing incoherence. He did not take food voluntarily, and became filthy in his habits. At the end of this time he became more restless; his former loud denunciation lapsed into incoherent muttering, and he was constantly trying to get out of bed. When allowed to do so he would crawl under the bed and try to hide himself. During the next month he grew weaker, did not try to sit up, and when put on his feet apparently could not stand. When not disturbed he would lie with his eyes closed, muttering and whispering incoherently to himself.

During the next year his condition remained practically unchanged. He had to be fed mechanically, was filthy in his habits, the delirium persisted; and the paresis of the lower extremities became more and more marked. His general physical condition was better, however. A little later he began to complain of loss of vision, and could not distinguish the different objects about him; but said that he could see "squirrels," "crickets," "snakes," and "bugs," about the room. During the next three months he was quite stupid, filthy in his habits, and

most of the time had to be fed mechanically. The loss of vision was apparently complete, and there was not even a light reflex. He was occasionally disturbed for short periods; usually manifested alarm for his personal safety; complained of many ill feelings; and also of disagreeable sights and sounds about him. By dint of persistent effort, and questioning, however, he could always be made to manifest some intelligent appreciation of his immediate environment.

About this time there began contracture of the muscles of the leg and thigh, and during the next month the legs became flexed upon the thighs, and the thighs partially flexed upon the abdomen. They could not be extended, and he always complained of great pain when the effort was made to extend them. During the next two months he improved physically, but still had to be fed mechanically. As he grew stronger he became boisterous; complained bitterly of the way he was abused, and was constantly talking about the things he saw and heard about him, which were alarming or offensive. It was apparent at this time, also, that he could see something of the objects by which he was surrounded; although he would disclaim this capacity if asked about it. During the next nine months he gradually improved physically; his body became robust and vigorous, but the lower extremities remained rigidly contracted. The muscles were extremely atrophied, and there was very little evidence of sensation. He was noisy, garrulous; alternately fawning in manner and fulsome in speech; or profane and abusive. He also became very self-conscious, enjoyed personal attention, and resented any apparent neglect. Visual and auditory hallucinations were active and persistent, and when his attention was not attracted by some one speaking to him, he was constantly and vociferously answering what he heard or disclaiming against what was said. He was especially troubled because the voices made lewd proposals to him, or accusations, and these he attributed to the nurses. He insisted that he could not see, but recognized people by their voices. He would not eat in the presence of others; but if food was put where he could get it, and he thought no one was near, he would eat it.

Sept. 1, 1899, he was put in bed, complaining of colic and diarrhea. There developed an entero-colitis, with frequent bloody stools, and tenesmus. He would not take food voluntarily, slept little; complained a great deal, but would not answer questions. He became very much emaciated, and very weak. After the first week of his illness, his legs gradually straightened out, the flexion of the thighs relaxed, and he could move his lower extremities with comparative freedom.

His illness lasted three weeks, and at the end of this time

he was almost a skeleton; but with the beginning of convalescence his appetite became ravenous, and he gained rapidly in weight and strength. He insisted, however, that he could not walk; although he dressed and undressed himself, and made his own toilet. As he grew stronger, the visual and auditory hallucination returned; he heard and saw "Satan," and numerous "devils" about him; often became noisily profane and obscene; denouncing them for tormenting him. He walked about with crutches; and it was noticed that, when he thought he was not observed, he would drag the crutches and walk without their aid. In the spring he was carried out of doors; where he could crawl about, talking to himself and complaining to any one who would listen about his ill treatment by "Satan" and the "devils." One day, when he thought he was not observed, he got up from the grass and walked quite a distance, but as quick as he heard any one near he would drop to the ground. The next day he was told that he must walk to the house himself, as no one would carry him in. He remained out for an hour after the other patients came into the house, but when he heard them eating supper could not stand it any longer; got up from the ground and came hobbling into the house, whining and complaining about his ill treatment. After this he made no pretence of being unable to walk nor of not seeing; rapidly regained his strength, became robust, and spent most of his time in walking.

He is now very vigorous, spends all of his time out of doors; his vision is acute, but the eyes have the expression of sightlessness. There is no evidence of motor involvement of any kind, but he is demented, although constantly plagued by the devils he sees and hears; the voices often coming from inanimate objects about him, and accusing him of all sorts of misbehavior.

A. F., a girl, 14 years old. She was quite stupid when admitted to the hospital, but in good physical health. No history of the family was obtained, nor of the patient, except that she was said to have suffered from convulsions for about a year before coming to the hospital, and had been quite violent at times. She was evidently a low-grade imbecile. She would answer questions, express her wants and care for herself; but was restless, irritable, and there was occasional muscular twitching; but no convulsions after coming to the hospital. The twitching gradually gave way to incoördination; she ceased to be able to walk, and was put in bed. The degeneration proceeded rapidly, and paresis became quite marked. The vegetative functions remained intact, and those of the bowels and bladder were performed automatically. For a time she was emaciated, but

afterward became well nourished. Her muscular activity was automatic, and the movements of the limbs were purposeless like those of an infant. Her mental functioning was entirely rudimentary; she laughed and cried like a baby, but had no articulate expression; was entirely without comprehension of spoken words, and indeed an infant; without capacity to relate or coördinate external impressions.

After a time she began to make articulate sounds, and gradually the simplest coördinate movements; such as grasping an object, and carrying it to her mouth. Next she began to sit up, then gradually to get about, and finally to walk. After getting up and about the ward, a process of reëducation was begun, and she eventually acquired sufficient capacity to care for herself, sew, read a little, and carry on ordinary conversation on subjects pertaining to her environment.

It will be noted that in the first and third cases there was no paralysis, but on the contrary, so far as could be determined, muscular power remained intact. In the first case the apparent loss of power was due to general spasm, while in the last it was due to incoördination, and it is probable that the inability to articulate was also the result of incoördination.

The nearest approach we have to a similar condition due to organic involvement is in those cases of chronic hydrocephalus where the fluid in the lateral ventricles accumulates so rapidly that the cortex is compressed against the cranial wall, and there results general spastic tremor and sometimes convulsions. Here of course the source of the motor manifestation is in the mechanical irritation from pressure. Another analogous condition is that existing in status epilepticus, but here too the cause is practically mechanical, the condition resulting from engorgement and edema, which sometimes have their origin in failure of the function of the kidneys, but more often in failure in the function of the brain, resulting from exhaustion; and, post-mortem, the evidence of cell fatigue is all that is found.

The third case was incorporated in this record because it offers the best basis for an hypothesis as to the pathology of these conditions; and unfortunately any explanation must be hypothetical, because we have no histologic basis from which to determine their pathology.

The complete recovery so far as motor capacity was con-

cerned, the return of the power to articulate, the later improvement in verbal capacity as the result of training, and the acquisition of a fair degree of manual dexterity, show that no permanent damage was done to the neurone. We have not had many opportunities for study of the brains of the feeble-minded before the ordinary terminal processes of degeneration had begun, but the few cases we have examined did not present anything peculiar histologically, outside of the gross differences common to the defective. There was evident only an apparent numerical difference in the cells in a given cortical area, with a relatively greater proportion of neuroglial tissue.

The most apparent explanation is the general reduction of capacity from exhaustion or autointoxication, resulting in the production of excessive irritability and hypertension. This explanation might apply to the first and second case, but not to the third, for the patient was in good physical condition at the beginning of the manifestation of motor disturbance.

However, the progressive emaciation which went along with the loss of muscular coördination would suggest that there was some trophic involvement. In the record of a case of general paralysis reported by me ("Sensory and Sensory Motor Disturbances," *JOURNAL OF NERVOUS AND MENTAL DISEASE*, for Oct., 1892) this same progressive development of incoördination with loss of the power of articulation was present, and in this case too there was a relatively complete restoration.

To the careful student of insanity there is no one element so conspicuous as the tendency of its manifestations to occur in cycles. Excitement to be followed by depression in both motor and mental disturbance, or its converse; with a period of apparent restoration between. Furthermore this wave-like tendency is most marked in those who are most defective, and is most conspicuous in those individuals who break down in early life.

In the defective individual whatever gives rise to the outbreak of mental disturbance also starts the process of reduction in capacity for coördination of functional activity in the nervous system, and this process once started seems to have a tendency to proceed definitely to a certain degree, and this is most

marked in those in whom the process of degeneration starts earliest, and in these subjects the reduction is most extreme. The presence of motor manifestations in some, and not in others, is accounted for by the antecedence of some form of motor involvement, as in the cases included in this report. In two of which there was hysteria, and in the other convulsions.

Each cortical cell has a definite potentiality, and a capacity governed by the completeness of its reconstitution. Temporary conditions may exist, which exhaust capacity, and confusion supervenes; to be followed by incoördination. This is illustrated in the mental and motor disturbance accompanying typhoid fever, pneumonia, or septicemia; and in more marked degree in chronic uremia. These conditions are recovered from, however, and capacity is restored. But in the defective individual, the potentiality of the neurone is more limited, and its capacity for reconstitution is lessened; so that there is a progressive failure of power; first manifested by increased irritability, then by spasm, incoördination, and finally by exhaustion. If the vegetative functions remain intact, there is a gradual recuperation, with restoration of capacity and return of function. We can only presume that the changes which produce these results are chemical primarily, and have their origin in instability which is extreme, with the resulting tendency to respond excessively to slight stimuli.

A CASE OF UNUSUAL CEREBRAL HEMORRHAGE.

By O. T. OSBORNE, M.A., M.D.,

PROFESSOR OF MATERIA MEDICA AND THERAPEUTICS AT YALE UNIVERSITY.

Mr. X., a student, aged twenty-four years, first came under my care on November 19, 1900. I was sent for hurriedly to find him in a half-stupor with projectile vomiting, almost pulseless at the wrist, but covered with a warm perspiration. He had been swimming in a tank, but had been able to dress himself before the attack culminated.

Examination of the urine showed it to be milky in character on account of the presence of phosphates, with no other abnormal condition. The patient received a hypodermic of strychnine, and a nurse was sent to watch him. During the next few hours some improvement in his condition occurred. The symptoms of the next four days were those of pressure on the medulla oblongata with marked Cheyne-Stokes respiration, the latter lasting four days. The temperature was subnormal, down as low as 97° ; the pulse was sometimes as low as 48. There was stiffening of the back of the neck and occasional projectile vomiting.

A history of a similar attack, although not as severe, about three weeks before, was obtained. At that time he had had some jaundice, and had been noticed to yawn a great deal, this showing disturbed respiratory function, but none of the distinct symptoms of implication of the medulla oblongata were at this previous period present.

A diagnosis was made of pressure of that region of the medulla oblongata which contains the pneumogastric and spinal accessory centers. This would account for the reflex vomiting, slowing of the pulse, and stiffening of the sterno-cleido-mastoid and platysma muscles, and also the disturbance of the respiratory center, unless respiration is a pneumogastric function.

During the attack in November he could be aroused, but was half stupified for four or five days. He could not at first

be raised or moved, or even take a drink without vomiting. Gradually the vomiting ceased, the respiration improved, the stiffening of the back of the neck lessened, the temperature came up to normal, and the pulse increased in frequency. There were no cerebral symptoms at this time except headache, which was not very intense or very severe, and was largely basal. The diagnosis of a gumma or glioma was made, and mercurial inunctions were begun and potassium iodide was given by the mouth.

In three or four days when he could be properly aroused and his answers were intelligent, a history of an initial lesion three years before was elicited, for which treatment had been given for three months. There had never been any secondary symptoms.

The patient gradually improved, and on November 29 he was sitting up, and in a few days more was down stairs. On the first exercise, he had slight fainting attacks with rapid pulse, running up sometimes to 110 and 120, and a little increase in temperature; evidently purely functional disturbances. The signs at this time showed distinct absorption of whatever had been causing pressure on the medulla oblongata. He gradually got out-of-doors, and on the 14th of December, 1900, came to my office with a history of constant improvement. On the 18th of December he went skating, and soon after behaved queerly, had epileptic attacks, screamed, was delirious, then stupified, and then would again be aroused and complained of intense headache, but without any symptoms of pressure on the medulla oblongata. On the 19th he became difficult to manage, and required two attendants. He was then taken to the hospital with the symptoms of cerebral pressure, and soon showed some fever, and an irregular and rapid pulse. Some retinitis was now present, and a peculiar intermittent facial paralysis of the left side developed. His condition became temporarily better only to again grow worse with finally stupor ending in death in about ten days.

Professor H. B. Ferris made the autopsy which showed a friable disorganized mass about the size of an English walnut in the anterior part of the right cerebrum, with a clot hanging

to it which had made quite a space for itself in the brain substance. This clot was continuous with a large clot, apparently of recent origin, in the lateral ventricle on the right side. Another clot of earlier formation was in the third ventricle, and a third clot, I thought still older in appearance, was in the fourth ventricle and pressed on the medulla oblongata.

Microscopical examination of the above mass showed it to be an old blood clot. The arteries of the brain were everywhere healthy.

NEW YORK NEUROLOGICAL SOCIETY.

May 6, 1902.

The President, Dr. Joseph Collins, in the chair.

A Case of Primary Myopathy.—Dr. J. Ramsay Hunt presented a girl of sixteen having a negative family history. One year and a half previously there was noticed a difficulty in pronouncing words, and also a nasal twang. A few months later there was some regurgitation through the nose, and it was noted that she did not close the eyes completely during sleep. Examination showed marked deficiency of the muscles of the face on voluntary and emotional innervation. The orbicularis oris and the orbicularis palpebrarum and the zygomatici were chiefly affected. The palatal muscles were motionless. The muscles of the upper arm and shoulder were small. The tendon reflexes were active, but there was no evidence of involvement of the pyramidal tract. The speech mechanism was easily fatigued, articulation becoming less distinct on prolonged effort.

Tumor of the Brain.—Dr. Max Mailhouse, of New Haven, presented a brain taken from a woman who had been admitted to the New Haven Hospital on March 13 with a history of severe headaches for a year and a half, and considerable mental disturbance. Speech was incoherent and muttering. There were exaggerated knee-jerks; also ankle-clonus and increased plantar reflexes. The optic nerves were atrophied and she could only distinguish light. Twitching of the muscles of the eyebrows was observed the first night, and she was so restless as to require restraint. During the six weeks she was in the hospital there were two or three attacks of vomiting. She complained constantly of headache and thirst. On April 14, when examined by Dr. Mailhouse, there was slight strabismus from weakness of the left internal rectus; the knee-jerks were exaggerated and there was ankle-clonus on each side. There was loss of vision. Her mental condition was fairly good. She became more restless and talkative and the pulse became more rapid and irregular, and two days before death she became unconscious, and died in this condition. The autopsy was made on the day after death. It revealed a tumor in the interpeduncular space, and examination of the tumor showed that the growth either originated in or soon involved the optic chiasm. The tumor pressed upon the left third nerve, and also upon the facial tracts above the pons, causing the spasmodic twitchings of the facial muscles. No report of the microscopical examination had yet been received.

Paralysis of the Serratus Magnus.—Drs. Joseph Collins and I. Abrahamson presented a woman of twenty-eight who had been in fair health up to last November. At this time she had had an attack of suppurative tonsillitis, which was followed by suppuration of the glands at the posterior border of the sternomastoid muscle. These glands were incised and much pus evacuated. About seven weeks afterward the shoulder was noticed to project upward and it was the seat of a throbbing pain. When seen the left scapula presented a wing-like appearance as a result of what appeared to be an isolated paralysis of the serratus magnus muscle. Some of the fibers of the supraspinatus and of the infraspinatus showed slight reaction to the faradic current and

some slight atrophy. There was a large linear post-operative scar along the upper posterior border of the sterno-mastoid muscle. There was some enlargement of the glands on the left side of the neck. The diagnosis was based upon the position of the scapula while at rest, on the peculiar limitation of movement when the arm was brought forward at a right-angle, on the absence of sensory disturbances and of symptoms pointing to spinal origin, and on the presence of degeneration reaction. The lesion was evidently a post-infectious neuritis involving the posterior thoracic nerve, probably the portion in the body of the scalenus. The chief features of interest were: its peculiar etiology; its occurrence in a female; the absence of trauma and of any of the ordinary causes; its late recognition; the change in the position of the scapula when at rest; the presence of scoliosis as had been observed by Stromeyer in a few cases.

Dr. W. M. Leszynsky said that most of these cases of serratus magnus paralysis were due to pressure or to progressive dystrophy, but he had shown a case to this Society in which it had followed an infection—a pneumonia.

Atypical Syringomyelia.—Dr. Joseph Collins showed a case which he had diagnosticated as syringomyelia. The patient was a stationary engineer, fifty-seven years old, who had lived a temperate and healthy life, not exposed to syphilitic or inorganic poisons. Three years ago he noticed, on going down stairs, that he tripped easily, and that he was getting clumsy in the use of his feet. About the same time he remarked that the little and ring fingers of both hands were becoming stiff, as he termed it. He found difficulty in using these fingers dexterously, and in appreciating objects coming in contact with them. Soon these fingers became deformed; a flexor deformity of the second and third phalanges was noticed, which was gradually progressive and which was dependent upon atrophy of the hypothenar muscles and the last interossei. At the same time the loss of sensibility in the ulnar distribution progressed. About a year ago a slight sore developed on the ball of the right foot, and had become a typical perforating ulcer. The patient presented now the following condition: (1) atrophy of the hypothenar and last interossei muscles, and consequent deformity; (2) glossiness of the skin of the hands; (3) analgesia and thermo-anesthesia, and partial tactile anesthesia in the little fingers and the ulnar half of the ring finger; (4) thickening of the ulnar nerves, rendering them palpable; (5) increase of mechanical irritability of the muscles of the upper extremities; (6) typical perforating ulcer in the ball of the right foot; (7) analgesia and thermo-anesthesia of the toes and the outer half of both feet; (8) slight exaggeration of the tendon jerks in the lower extremity; (9) no deformity of the spine and no symptoms referable to the cranial nerves; (10) no disturbance of the sphincters or of the sexual function. Dr. Collins said that the case was not a typical one of syringomyelia, but that diagnosis seemed more likely than any other. The condition was a progressive one.

A Case of Raynaud's Disease.—Dr. B. Onuf presented a young man with Raynaud's disease that had existed for about two years. Sensation was normal during the attacks. There was a history of rheumatism of the joints. He was a sailmaker by occupation, and in his work the tool used caused pressure on the right palm. The urine showed an abundant deposit of urates. He had not been improved by any method of treatment so far employed.

Mental Dissociation in Depressive Delusional States.—Dr. Ira Van Giesen was the author of this paper, which, he said, represented some

of the work formerly done in the New York State Pathological Institute. The subject of the report was a Russian of twenty-six having a good family history. In February, 1900, he had begun to suffer from insomnia, headaches and loss of appetite, and had become despondent. The general health had rapidly deteriorated, and a local physician, on examining him, stated that his trouble was largely indigestion, and that there were "lumps" in the bowel. This was the foundation of a delusion which the patient fondly cherished. There was also a belief that there were worms in the intestine which worked upon the lumps and broke them up into minor lumps and sent the latter throughout the body. The patient believed that he was rescued from his dire distress by three agencies, viz., the spleen, the soul, and the veins, the soul being the scavenger and the spleen the director. When the attention of the soul was distracted this work was not well done. As might be expected the patient was extremely depressed and his physical condition suffered. He could only speak readily on the all-pervading subject of his delusion. The loss of attention was marked except as regards the systematized delusion. No gross motor disturbances were present. The patient reacted slowly to external stimuli. There were no sensory disturbances, and no hallucinations, and no tendency to self-destruction. He could fully realize his environment and his relations to space and time. As soon as he passed into hypnotic trance a metamorphosis occurred, the patient passing from intense depression to a state of great exaltation. Despite this the focal delusion persisted and appeared to be far better organized. This clearly pointed to the fact that either the state of depression was one of secondary formation or the delusion, being secondary in its origin, had gained sufficient strength to stand by itself, even after the emotional basis had been withdrawn. The latter alternative seemed to be the more probable. In his trance he could vividly remember all that had taken place in his waking life, and, on the other hand, he could recall fairly well what happened while in the trance. Later on the patient at one time passed into a deeper trance and then passed from a state of inexpressible delight to one of grave composure. In the last trance personality he could remember all the experiences of the other trance personality and of the waking personality. The relation of these three personalities was described diagrammatically by three concentric rings. The central one was the melancholic personality, and outside of this were successively the one ring representing the first and second trance personalities. Of the three personalities, the waking was pathological. The first trance personality was an exaltant, while the second trance personality approached closely to the patient's healthy condition. The course of these personalities resembled quite closely what was observed in circular insanity. These alternating personalities were, however, ephemeral. Soon the first personality shrunk and finally disappeared altogether. In the course of time the first trance personality disappeared and never returned. The mood of the second trance personality then lost some of its former seriousness. The tendency was for the intermediate personalities to disappear and the last one to become the dominant one. The process of evolution of species in general was one great illustration of the process just described. Throughout all of these transformations the central delusion remained unshaken. The great assimilating power of this delusion was wonderful. Various suggestions were given to this patient; although they were designed to break up the nucleus of the delusion they were turned about by the patient and fed into this systematized delusion. It was necessary to follow the patient in his delusion and play into the hands of the latter in order to make the suggestion take root. Direct suggestion during deep hypnosis was the

usual method of breaking such a strong delusion, but the objection to this method was that it was apt to be only temporary in its effect. The method of emotional substitution was especially valuable in a case of this kind. Some unimportant sensory changes were first attempted, as for example, the abolition of the unpleasant thermal changes in the "lumps," but they were only partially successful. The effort was then made to fuse the different personalities. During hypnosis dreams were suggested to the patient, with the object of effecting changes in the central delusion. For example, in one of these dreams his father told him that these lumps would go away. These dreams impressed him deeply though slowly. When the good dreams had become dominant the spleen and soul began to drop out, and then the galvanic current was substituted for the soul with great benefit. Small spots were next substituted for the large lumps. The spots were gradually confined to certain definite areas instead of being vaguely disseminated. The patient's melancholia finally disappeared completely and he had now resumed his original vocation. The case was regarded as a triumph for this mode of treatment, and as a type of many other cases now in the State Hospitals for the Insane.

Dr. Mary Putnam Jacobi asked whether the transition of the two personalities had occurred spontaneously or had been brought about by some special maneuver.

Dr. Henry Rafel asked if there were any other case on record in which hypochondriasis had been cured in this manner by hypnosis.

Dr. Van Giesen said that the paper had been prepared by his former associates at the State Pathological Institute. The transition of the personalities had occurred spontaneously. He was not sufficiently familiar with the literature to answer positively the second question. If hypnosis had been used in the ordinary way the result would have been only transient benefit; a permanent cure had been effected by a thorough understanding of the whole mechanism of hypnosis. This patient had been cured eighteen months ago.

Periscope.

Archiv f. kriminal Anthropologie und Kriminalistik.

(1902. Vol. 9, Nos. 2 and 3.)

6. Contribution from Legal Medicine concerning the Use of Secret Codes among Criminals. SCHUTZE.
7. Study of Evidences, especially Foot Traces. SCHUTZE.
8. The Main Advances in Criminal Anthropology in 1901. NÄCKE.
9. Internal Stigmata of Degeneration. NÄCKE.
10. How do Homosexuals know One Another. MOLL.
11. The Case of Fischer. SIEFERT.
12. Criminal or Insane. POLLACK.
13. Value of Evidence. LELEWER.

6. *Concerning the Use of Secret Codes among Criminals.*—The author discusses several codes used by criminals in writing to each other; these were in part explained by the criminals, in part deciphered. The codes are based on various principles, but are all in principle very simple. There are, in the first place, the ordinary arbitrary codes, in which each letter, or at times combinations of letters, is represented by some other accepted literal equivalent. Other codes are built on a figure basis, e.g.,

$$\begin{array}{c|c} a & b|c \\ \hline d & e|f \\ \hline g & h|i \end{array}$$

the tit-tat-toe code, and so on, "a" being represented by —, "j", the first letter of the second series by J, "s", the first of the third by S, etc. Finally, there are codes in which a single word, the component letters of which are numbered, serves as a key to the system. [The tit-tat-toe code is widely used in America.—J.]

7. *Study of Evidence, especially Foot-traces.*—A narrative article.
8. *Advances in Criminal Anthropology.*—A review for 1901.
9. *Internal Stigmata of Degeneration.*—From a study of 104 paralytics and a comparison of their organs with those of 108 average bodies from the public hospital in Chemnitz, the author selected the following anomalies as fairly characteristic of the former group. Lungs: anomalies of size and lobation. Heart: diminution in size, also of vessels; double apex; potency of foramen ovale or ductus Botalli. Liver: anomalies of size and form, multilobar type, multiple and deep fissures, absence of Spigelian or quadrate. Spleen: anomalies of size and shape, lienculi, lobation. Kidney: anomalies of size and shape, asymmetry, horse-shoe kidney, double pelvis or ureter.
10. *How do Homosexuals recognize each Other.*—In addition to the signs ordinarily made use of by one individual to attract the attention of another, the homosexual is known to his fellow by over-ornamentation in dress—rings, powder, etc. In addition, there are certain arbitrary signals, e.g., the wearing of different colored carnations. Finally, a characteristic motion of the tongue is described.
11. *The Case of Fisher.*—An analysis of a *cause célèbre* and of the criminal agent.
12. *Criminal or Insane?*—The case of a degenerate, semi-imbecile, and alcoholic, a wanderer between prison and asylum.
13. *Value of Evidence*—especially that of children. An essay.

R. WEIL (New York).

Archivio di psichiatria, scienze penali ed antropologia criminale.

(1902. Vol. xxiii., fasc. ii.-iii.)

1. Enrico Ballor, the "Hammerer." C. LOMBROSO.
2. The Compass Index. BELLOIN.
3. The Perception of Tactile Impressions. GRANDIS.
4. A Great Monomaniac—Girolamo Savonarola. PORTIGLIOTTI.
5. Voluntary Mydriasis and Epilepsy in a Man of Genius. LOMBROSO AND ANDENIRO.
6. The "Crime" of Striking. LASCHI.

1. *The Hammerer*.—This presents an analysis (psychological as well as anatomico-physiological) of a criminal who killed with a hammer two persons. It is the author's intent to prove that, even in the absence of marked physical stigmata of degeneration, the presented defects of the visual, motor, and above all, the moral functions stamp the subject as a born criminal. Hereditarily was found in the father a shiftless drunkard. One of the brothers a veritable subject of moral insanity, the mother dolicocephalous, with stenocrotaphy and prognathism, a spastic paralysis of the muscles of the cheeks and tongue, migraine and vertigo. It is also to be noted that the criminal had evidently suffered from an attack of meningitis and polio-encephalitis in his tenth year (before which time, by the way, he was a good, normal child). This illness seems to have left ineradicable and most important consequences, such as abolition of reflexes, impaired pupillary reaction, anomalies of the visual field, peripheral scotoma, and a tendency to excessive physical development as well as decided criminal propensities.

2. *The Compass Index*.—A description of an anthropometric instrument.

3. *The Perception of Tactile Impressions*.—A series of preliminary experiments in which pressure on the cutis was substituted by the induced electric current. Special attention is drawn to the relation between tactile sensibility to psychical function.

4. *Girolamo Savonarola*.—Will be abstracted when completed.

5. *Voluntary Mydriasis*.—This is an interesting account of a subject whose anamnesis, present state and anthropometric measurements, fully bear out the authors' contention as to his abnormality. The most singular feature of the case is the individual's faculty of voluntarily dilating his pupils, increasing the vascular pressure, and accelerating the cardiac movements; he could double the pressure while the pupillary dilatation was invariably accompanied by acceleration of the cardiac pulsations. The intervals between severe epileptic fits are characterized by extraordinary mental acuity, especially as to sociological studies. He also possesses a truly remarkable memory, especially for ideas, and a great facility for acquiring foreign languages; suffers to some extent from folie de doute. With the above mentioned dilatation of the pupils there takes place a rapid contraction of the zygomatic muscles, and the patient grows pale and trembles; at the same time there appears strabismus. The authors assume the possibility of a vasomotor phenomena only to a certain extent voluntary, for a similar condition is observed in some artists, as for instance, the great Italian tragedienne Duse, who blushes and grows pale at will.

6. *The "Crime" of Striking*.—A critical survey of the history of labor organizations in several European States, the various legislative measures affecting them, especially as regards the workmen's rights to strike; of considerable interest to the student of sociological problems.

ALEX. ROVINSKY.

The Journal of Mental Science.

(1902. Vol. 48, No. 202, July.)

1. Report of Tuberculosis Committee of the Medico-Psychological Association of Great Britain and Ireland.
2. Toxemia in the Etiology of Mental Disease. Discussion by T. S. CLOUSTON and others.
3. Surgical Treatment of Delusional Insanity based upon its Physiological Study. T. CLAYE SHAW.
4. Sleep in Relation to Narcotics in the Treatment of Mental Disease. HENRY RAYNER.
5. Notes in Some Cases of Morphinomania. ROBERT JONES.
6. Evolution of Delusions in Some Cases of Melancholia. LIONEL WETHERLY.
7. Pupillary Symptoms in the Insane and their Import. T. P. COWEN.
8. Prophylaxis and Treatment of Asylum Dysentery. N. H. MACMILLAN.
9. The Psychiatric Wards in the Copenhagen Hospital. KNUD. PONTOPPIDON.
10. Clinical Notes and Cases.

1. *Tuberculosis Among the Insane.*—This subject has been widely discussed by the English alienists and the Report of the Medico-Psychological Association is given here in full. The work is mainly that of Dr. Eric France, who was appointed honorary secretary to the committee. The dangers are very fully pointed out and a most careful and comprehensive series of statistical tables emphasizes the great importance of the inquiry. Space permits only a short summary of this report. The conclusions given are: that phthisis is prevalent in the public asylums to an extent which calls for urgent measures. A very large number of cases of phthisis have acquired that disease after admission to the asylum. The special causes for this increased prevalence of phthisis in the asylums are: Overcrowding, with consequent insufficient day, and especially night, cubic space per patient; insufficiency of hours in the open air; defects in ventilation and heating; uncleanly habits and faults in dietary.

The means of prevention suggested are: Early diagnosis, isolation of all phthisical cases, limiting the size of future asylums, checking overcrowding, increasing day and night cubic space, restricting number of beds in dormitories, increased and more thorough natural ventilation per patient, stopping of promiscuous spitting, supervision of dietary, properly constructed hospitals and sanatoria, or these failing, temporary isolation hospitals or special wards and airing courts set aside for the purpose.

2. *Toxemia in the Etiology of Mental Disease.*—This is an interesting discussion of the etiological doctrine of toxemia in mental disease. Pathological workers are considered to hold more to the auto-intoxication theory than clinical observers. Dr. Clouston in opening the discussion suggests a number of queries which must be satisfactorily answered if the causative factors are to be found. The influence of mental factors is one of the first: consciousness and mental states are modified in sleep, the hypnotic state, etc., why may not exaggerations in these physiological processes be concerned in the insanities? The abrupt onset and equally sudden termination of many insanities seem inconsistent with known toxic activities: the specific reactivity of cortical cells to purely sensory stimuli exhibits very wide variations. Morbid activity or abnormal torpor might bring about such insane reactions and the

theory of toxemia is unnecessary. Ancestral hereditary reactivity is pointed out as one of the most potent factors in determining abnormal mental life, especially when faulty heredity renders a nervous system peculiarly susceptible, even to the slightest stimuli; developmental and involutional insanities, such as are seen at puberty and in senility surely do not need a toxic hypothesis; many brains, by a natural development of their original characters, determine a later mental disease; immunity correlatives should be borne in mind; elevations in temperature are not necessarily the reaction to a bacterial or toxic agent. Toxemia might be an element in many insanities, 'tis true, but is it not more scientific to regard it as a secondary activity, rather than a primary one? The medical psychologist holds that the cerebral cortex is the real controlling center of secretory and excretory processes and of nutrition, and in its action or inaction might cause or counteract those states of non-resistiveness through which injurious bacteria and toxins were developed or destroyed. In syphilis, alcoholism, rheumatism and other similar states the toxic element is recognized, in other insanities the causation is best arrived at from other points of view: in short that insanity is a protean disorder and no single etiological factor is sufficient to explain these.

Dr. Ford Robertson spoke of the toxic theory but added no new features to the discussion. His definition of toxemia is interesting although from a pharmacological side very indefinite and unsatisfactory: "Any chemical substance which on being brought to a cell and taken up by it, caused disorder of its metabolism, was a toxine for that cell." Melancholia he regards as essentially a toxemia. He develops a few straw bail arguments, assuming, for instance, that neurologists regarded tabes as a disease of the cord, or that insanity was a disease of the brain, etc. No thinking alienist or neurologist ever reasons thus, nor have they for many a year.

Dr. G. R. Wilson gives some sound remarks on the breadth of the subject practically bearing out Dr. Clouston's closing remarks. Dr. Yellowlees emphasized the mental influences with which every alienist is familiar but the pathologist would seem to disregard.

Dr. Bruce raised the question, "Do the mental symptoms precede the physical or the reverse?" a question which the modern physiological psycho-pathologists would, we believe, find unnecessary and non vital.

Dr. Marr writes that when actual experimental proof of the relationship can be shown then there will be time to consider the theory.

3. *Surgical Treatment of Delusional Insanity.*—Dr. T. C. Shaw, adopts the thesis that disease of the brain is never universal, but is apt to be localized and suggests an ideal for operative treatment of some of the delusional insanities on the lines of operative interference in Jacksonian epilepsy. By a careful study of the symptoms, it is important to try to find a primary lesion focus, if possible. The problem of localization was one in need of thorough investigation. He had nothing definite to offer but the paper is suggestive and timely.

4. *Sleep, Narcotics and Mental Disease.*—Dr. Henry Rayner limits his consideration of sleep to such aspects of it as are related to the question of the treatment of sleeplessness by narcotics; to consider whether the state of narcotic sleep or narcotic stupor is as reparative as normal sleep, and whether the relief of the symptom sleeplessness by the use of narcotics may not be too dearly purchased by the harm done in other directions. He concludes from a theoretical consideration of the pharmacological action of the various hypnotics, etc., that more harm is apt to result from the use of these agents than good. His arguments really resolve themselves into a question of his own clinical

experience and this has led him gradually to discard the use of narcotics, altogether in narcotic dosage, and only at rare intervals in the hypnotic form, and then only in the form of bromide, or a small quantity of alcohol.

5. *Morphinomania*.—Dr. Robert Jones, of Claybury Asylum, London, gives a short account of eight cases of insanity resulting from the habitual use of opium or morphine. Of the forms of insanity noted, the depressed insane states were commonest. Three males were melancholy and one maniacal; two females were melancholy, one was suffering from delusional insanity and one from mania. In the matter of treatment he advocates sudden withdrawal.

6. *Evolution of Delusions and Melancholia*.—Dr. L. Weatherly says that in many melancholiacs the delusions have not had their origin in the imagination only, but they have been evolved from some definite reality. A tendency to brood over these realities becomes more and more rooted and they take full possession of the mind, overmaster the will, pervert the reason and gradually develop into a systematized delusion. To treat these cases half measures are of little value and the author advocates the following: (1) Cut the patient adrift from his associations and place in a new environment; (2) build up the physical health; (3) occupy the mind by diversified walks and amusement, neither fatiguing, nor permitting time to hang heavy; (4) gain the patient's confidence. Never deceive him; (5) never allow the attendants or nurses to attempt to get their patients to do what they wish by false promises, or by agreement with them in their insane ideas.

7. *Pupillary Symptoms in the Insane*.—Dr. T. P. Cowen practically limits his paper to the pupillary symptoms as seen in general paresis. Two classes of pupillary abnormalities are observed in insanities, he writes: (a) inconstant variations; (b) persistent or wholly progressive impairment. The former are alone met with in cases other than general paresis and senile dementia, whereas both classes of symptoms are present in the latter organic disease. In general paralysis the first eye symptom is a slight inequality of the pupils with a sluggishness on the part of the larger pupil to contract to a subdued light, accompanied by an absence of the usual dilatation following cutaneous stimulation, while all the other reactions are perfectly normal. Of the symptoms in detail he says: *Size*—The pupil is more often dilated, which dilatation may be unilateral or in both. *Inequality*—This is an early symptom and not necessarily associated with impairment of the reflexes. *Contour*—One or both may be irregular. They may be oval above, below, or in both situations. *Mobility*—He finds higher figures than those of Bevan Lewis, 13.6 per cent. *Light Reflex*—In 33 per cent. of his cases both pupils were fixed; in 38 per cent. one or other was fixed or sluggish; 23 per cent. showed sluggish reaction in both; 3 per cent. were normal; 2 per cent. showed a constant oscillation.

These affections of the pupil are not confined to true paresis but may be seen in alcoholic, syphilitic and saturnine pseudo-paresis. In the remissions of paresis the pupillary symptoms may disappear. This recovery, he notes, he has never observed with the markedly myotic pupil.

8. *Asylum Dysentery*.—Dr. Macmillan gives his experiences with this disease at Claybury. The means adopted to prevent its spread are isolation, and asepsis in regard to all the details of the patients, food, dress, etc. Especial attention should be devoted to the relapsing cases. So far as active treatment is concerned, no specific has as yet been found. In uncomplicated cases the treatment is expectant. In the more severe cases castor oil dr. ss-iss, with or without opium, or magnesium sulphate, are exhibited. The newer proteid foods, as tropan,

plasmon, etc., are of service. Alcoholic stimulation may be necessary. In the excessive diarrheas, after the disappearance of blood, subnitrate of bismuth and opium are valuable. Thirst is best relieved by cracked ice; pain is relieved by turpentine stupes, and tenesmus is remedied by small enemata of opium and starch.

9. *Psychiatric Wards at Copenhagen*.—A short account of the buildings used in the Copenhagen general hospital for psychiatric purposes. JELLIFFE.

Jahrbücher f. Psychiatrie und Neurologie.

(Vol. 21, Nos. 1 and 2, 1902.)

1. Changes in the Motor Cells of the Spinal Cord After Resection and Tearing out of the Peripheral Nerves. E. STRAUSSLER.
2. Migraine Psychosis. KRAFFT-EBING.
3. Clinical Discussion of So-Called Traumatic Syringomyelia. R. KNIEBOCK.
4. The Clinical and Anatomical Facts in a Case of Cerebellar Tumor. M. PRORST and K. von WIEG.
5. A Case of Isolated Softening of the Gyrus Hippocampus and Its Immediate Vicinity—Secondary Denegeration. E. BISCHOFF.

1. *Changes in Motor Cells of Spinal Cord*.—Although for a decade the ganglion cells have been most earnestly studied, the results cannot be said to be satisfactory. The difference of opinion has extended even to the fundamental principles which Nissl promulgated, namely, that changes in the nerve cell take place when there is a break in continuity between the nerve and the muscle cell, irrespective of how the break occurs; that is, whether the nerve is simply cut, resected, or torn out with violence. Van Gehuchten and others found that simple interruption of continuity caused no cellular changes, while De Buck and Vanderlinden were not able to demonstrate cell changes in a number of experimental amputations on the extremities of animals. Marinesco has repeatedly called attention to the fact that a difference exists accordingly as the nerve is torn, or is simply cut. With this question came also another, that of retrograde degeneration, which, first announced by Nissl, was seized upon eagerly by other investigators as an explanation of the various different findings in experiments of this nature. The author of this paper planned a series of experiments which had for their main purpose the determination of the difference in the cells of the cord which is found when a simple break in continuity of a nerve fiber exists and in one in which the break is caused by the forcible tearing out of the nerve. Cats were used for the experiment and the brachial plexus or the sciatic nerve was selected as the object of the experiment. The results after resection were the following: From five to thirty days after the operation a gradual progressive alteration of the ganglion cells was observed. This alteration was especially marked in the tigroid substance. It was accompanied by swelling of the cells, with little or no alteration of the nucleus. The cell branches were broken. After tearing out the spinal nerves, cellular changes appeared in twenty-four hours, which at first were limited to the tigroid substance. Within five days definite changes in the nucleus were added, which in many cases resulted in the destruction of the same. Thirty days after the operation the process is concluded with the destruction of more than half the cells. Tearing out of the spinal nerves causes a lesion of the anterior column, which leads to a reactive inflammation, with proliferation of the glia cells. The author ends this study with the following general conclusions: (1) The changes which follow an uncomplicated simple resection of the spinal nerves

are not directly of importance to the life of the cell and to the trophic activity of the same. (2) Tearing out of a nerve is followed by severe degenerative changes in the cell, which is not dependent upon the break in continuity nor on the location of the lesion, but upon the reactive inflammation caused by the trauma. (3) The cell changes which follow simple break in continuity cannot be explained by the fact of the degeneration in the proximal portion of the nerve fiber following the lesion. Severe cell changes depend upon other causes than simple break in conduction. To offer as an explanation for the cell changes retrograde degeneration in the Nissl sense is of no value.

2. *Migraine Psychosis*.—The fact that a migraine attack is sometimes accompanied by a transitory psychosis led Krafft-Ebing to think that perhaps the relation is not a matter of chance, but that the psychosis was a direct result of the migraine. The psychical disturbances accompanying an ordinary migraine are too slight to be of great importance. They are simple anxiety, depression, fear, etc. Those migrainous attacks which develop upon an epileptic basis are complicated with certain forms of psychosis, which may be considered either an epileptic equivalent or a manifestation of post-epileptic insanity. Especially to be mentioned is the so-called ophthalmic migraine, which more frequently than the other forms accompanies an epileptic attack. Towards the elucidation of this question, Krafft-Ebing reports nine cases, careful clinical histories of which are included in this article. From these observations and others, Krafft-Ebing believes that there is no proof at present that such a form as an independent hemispheric psychosis exists. The question must be regarded as still open. The variety of such psychoses is a proof of their etiological complexity. It is only in cases of ophthalmic migraine, or that complicated with Jacksonian epilepsy, that transitory psychoses have been observed.

3. *Traumatic Syringomyelia*.—This paper by Kniebock is a valuable and painstaking review of all the published cases of so-called traumatic syringomyelia, for the purpose of testing the accuracy of the term and for the purpose of finding out the place which trauma occupies in the causation of this disease. It was Leyden, in 1874, who first called attention to a cystic degeneration of the cord following trauma. Since then numerous cases have been reported in literature. It is with a critical estimation of these cases that this paper has to do. The author defines syringomyelia as a condition in which chronic progressive foci of disease appear in the spinal cord. Such foci are situated in its center with a longitudinal direction, and the process is accompanied by glia hypertrophy, severe vascular changes, and by the formation of cavities. This definition is to be understood in its narrower sense only, namely, that of syringomyelia *gliosa*, as it is only in this form that a clinical diagnosis *intra vitam* can be made. Other affections which have to do with cavity formation, such as hydromyelia, sclerotic scars following injuries, do not come within the limits of this definition. The term traumatic syringomyelia should be given only to those cases in which the disease is caused by trauma, and in which the symptoms, both clinically and anatomically, are characteristic of this disease. This term should neither be given to those cases which are really not syringomyelia (*gliosis*), nor to such in which the trauma is merely a secondary factor. One hundred and forty cases are collected from the literature; nine cases of the author's own are likewise considered. Some of the data derived from a study of this large material are as follows: The first division consists of cases which were diagnosed as traumatic syringomyelia and none of which satisfied the conditions of the above definition. This series illustrates how a centrally-located traumatic lesion can produce a symptom

complex very similar to that of syringomyelia but differing from it essentially in the lack of a chronic progressive course. A second group consists of six cases in which the symptoms were produced by a cystic degeneration of scar tissue following traumatic destructive foci. Here the cavities are mere softening cavities, produced in part by beginning absorption of the softened substance in the center of the focus and in part artificially by post-mortem manipulation. A further group is noted of severe traumatic spinal lesions in which changes in the spinal canal followed. A second division consisted of clinical observations in syringomyelia in which the traumatic nature can be set aside with great certainty. In this division it is not the diagnosis of syringomyelia which is at fault, but the term traumatic, as significant of an etiologic factor. To this group belong also the cases which result from peripheral trauma. There are two groups in this division, one consisting of cases in which too long an interval has elapsed between the trauma and the beginning of the symptoms, and the other where the interval was entirely too short, in one case less than one week. All these cases are carefully described and a critical study of them is added in each instance. The author concludes as the result of the study of this material that after careful examination of all the known cases, no certain example of traumatic syringomyelia, that is pure (*per se*), caused by a powerful trauma, can be found. Contrary to the opinion of many authors, Kniebock holds that the existence of a simple chronic and hematomyelogenous (that is the condition that follows a paralysis, especially paraplegia, caused by apoplexy) traumatic syringomyelia is a matter of much doubt. Outside of the clinical interest in this subject there is also a forensic side. It has always been thought a matter of certainty that a traumatic syringomyelia existed; now that this is not very likely, the question of damages in a case of syringomyelia developing after trauma must take into consideration either the likelihood of a latent syringomyelia or some special predisposition on the part of the patient. A very complete and well-arranged bibliography is found in this paper. The article is in every sense an admirable one and adds a great deal to our knowledge of this subject.

4. *Clinical and Anatomical Facts in a Case of Cerebellar Tumor.*—It has come to be believed that the function of the cerebellum has not only to do with regulation of voluntary movement of the body, but also serves as a sensory-motor organ. Clinical observation in increasing number has strengthened the latter hypothesis. Experimental evidence as to the function of the cerebellum cannot be directly applied to human cases; therefore each case of cerebellar tumor should be more carefully studied clinically and pathologically. To accomplish the latter purpose it is necessary to make a very exact serial section of the whole cerebellum. The case upon which the article is based is that of a boy, 12 years old, with no hereditary history, who had suffered for some months from vertigo, headache and vomiting. On examination the left side of the face was less responsive to stimulation than the right; the pupils were wide and did not react to light and accommodation. There was a papillitis with beginning atrophy. In the arms and legs there was slight ataxia. Romberg symptom, knee-jerks increased on both sides. The patient was passive and indifferent.

The anatomical substratum for this symptom-complex was a glioma of the cerebellum, which had grown to the middle lobe and the left lateral lobe, and had caused a hydrocephalus, with symptoms of increased intracranial pressure. A careful description of the microscopical findings in the serial sections is given in the article, which is illustrated by microphotographs.

5. *A Case of Isolated Softening of the Gyrus Hippocampus and Its Immediate Vicinity—Secondary Degeneration.*—The anatomical connection of the hippocampal gyrus which in all probability has to do with the cortical smell center, has been very little studied. There is no report in literature of the study of an isolated lesion of this region. A short clinical résumé of the case is as follows: Woman, aged 65 years. For twenty-three years she has had epileptic attacks from three to six times each month. Some of these attacks were followed by epileptic stupor or psychosis. She died of marasmus. During life careful examination revealed nothing abnormal in respect to the special sense nerves or to motility or to sensibility. Autopsy showed a moderately diffuse cortical atrophy and a focal disease on the inferior and internal surface of the right temporal lobe. Serial sections of the frontal and temporal lobes were made; the focus was found to be cyst. This case seems to offer definite proof of the fact, which has been assumed already, in studies of comparative anatomy and embryology, that the nerve fibers of the fimbria arise exclusively in the gyrus hippocampus, the uncus and the Ammons horn, that the fornix is made up of two portions in its dorsal knee, the fimbria portion and the so-called fornix longus, the latter arising from the corpus callosum. It appears that in man the calumna is an uncrossed communication between the Ammon's horn and the corpus mammillaria of one side. The fibers of the fornix longus end, as this case shows, in the neighborhood of the septum pellucidum, the fimbria fibers in part uncrossed in the lateral nucleus of the corpus mammillaria and in part crossed in the region of the septum pellucidum.

SIDNEY I. SCHWAB (St. Louis).

Nouvelle Iconographie de la Salpêtrière.

(No. 2, March-April, 1902.)

1. Affections of the Cauda Equina and the Lower Segment of the Cord. F. RAYMOND.
2. The Anatomy of the Lacunæ of Disintegration of the Brain. JEAN FERRAND.
3. Degenerative Infantilismus, Complicated with Dysthroidea of Puberty (Brissaud's Type). E. DUPRÉ and PHILLIPE PAGNIEZ.
4. Congenital Absence of the Greater and Lesser Pectoral. A. SOUQUE.
5. Little's Syndrome. GASTON DANIEL.
6. The Sense of Attitude. BONNIER.
7. Note on the Radicular Topography of Myelopathic Muscular Atrophy. CESTAN and HUET.

1. *Affections of the Cauda Equina and of the Lower Segment of the Cord.*—The anatomical limits of the conus terminalis have been fixed arbitrarily by anatomists. Recently Müller of Erlangen has found a basis that seems to be strictly scientific. That portion of the cord which gives rise to the last three pairs of sacral nerves and to the coccygeal nerve differs essentially in its histologic constitution from the adjacent structure. Raymond founds his limit upon clinical grounds in the following way: It comprises all paralytic symptoms of the bladder and rectum, associated with impotence in the male and an anesthesia limited to the anus, perineum, scrotum, penis in men, to the vulva, labia majora, and to the urethro-vesical mucous membrane in women. To this group of symptoms another may be added as it is frequently met with, consisting of a motor paralysis of the posterior region of the thighs, the legs, and the feet; (2) an anesthesia, total or dissociated, which occupies the median part of the posterior aspect of the thighs and legs, the external edge of the leg and foot, sometimes all the surface of the foot with the exception

of a narrow band adjacent to the internal border: (3) abolition of the Achilles reflex. In other words, it means a sensory-motor paralysis of the sacral and sacro-coccygeal plexus. The following case is given as an illustration: Man, 54 years old. As the result of a fall from a moving train the following symptoms appeared seventeen days after accident: (a) incomplete motor paralysis of the inferior extremities; (b) vesico-rectal paralysis; (c) functional genital symptoms; (d) trophic disturbances; (e) sensory zone of anesthesia—ano-perineo-rectal, which extended upon the neighboring buttock region and upon the posterior portion of the thigh. Zone of hypo-anesthesia limited to the external border of each foot on the dorsum. Subjective symptoms of pain, caused by passive motion of the lower extremity. The treatment of these cases may be divided into main divisions: symptomatic and causal. The latter is by far the more important, and under this head may be considered the three following possibilities: (a) traumatism, that is, a luxation of a vertebra or a fracture, causing compression of the spinal roots; (b) in the absence of an antecedent traumatism, the possibility of a specific infection must be considered; if present, it is probably an extradural process, a pachymeningitis specifica, which reacts very favorably to antiluletic treatment; (c) in cases where no trauma or specific infection is found and yet where the symptoms are the result of a circumscribed lesion, acting upon the cauda equina by means of compression, the symptoms of pain being especially marked, then the possibility of a tumor is very great. In such cases the surgical intervention, looking to the extirpation of the tumor, is not only indicated but is necessary.

2. *The Anatomy of the Lacunae of Disintegration of the Brain.*—The lacunae of cerebral disintegration were little studied before Pierre Marie took them up. This paper is based upon material collected in the laboratory of Bicêtre. The study of the anatomy underlying the loss of cerebral substance, the most frequent cause of the hemiplegia of old people, is the chief purpose of this paper. The chief results of this investigation may be summarized under the following heads: Macroscopic anatomy of the lacunae. The most frequent seat of the lesion is in the gray nuclei of the brain. Of one hundred lacunar lesions, eighty-seven were found in the central gray nucleus, and only thirteen in the white substance. Under histology of the lacunae, the principal facts noted are—whatever the size or the location of the lacunae may be, the process of their formation consists of two steps, first the miliary lacuna, which may be considered as the preparatory step. It is characterized by the fact that around a cerebral arteriole the tissue becomes thin but adherent to the vessel. In the second stage there is a formation of a cavity between the central vessel and the cerebral parenchyma. Lesions of the vessels. The central vessel is usually one of moderate calibre; sometimes it is an arteriole, but its walls are always very much thinned. Pathological change is found chiefly in the muscular layer. Connective tissue elements replace muscular fibers. This substitution takes place very gradually without any leucocytic infiltration and without any phenomenon indicating that the vascular walls have been the seat of any inflammatory reaction whatever. This change is not characteristic of cerebral vessels but is common to all senile arteries. The walls of the lacunar cavity are formed by the cerebral tissue itself, very little altered. Contents of the lacunæ. There are two sorts of elements, one from the cerebral parenchyma itself, and the other from the blood vessels. Sometimes the process of disintegration can be arrested by the cicatrization of the cerebral tissues and the proliferation of neuroglia can fill the cavity so that no trace of beginning cavity formation can be demonstrated.

3. *Degenerative Infantilismus.*—An account illustrated with photo-

graphs and radiographs of a case of degenerative infantilism. The interest in this observation consists in the successive factors which caused the developmental arrest of this child. Among them are to be noted alcoholic heredity, premature birth, retardation of dentition, the late appearance of speech and intelligence. This group tends to show a state of hereditary infantilism of toxic origin. An attack of typhoid fever at five years of age furnished the infectious element acting to favor the retardation of growth. At the age of fourteen there developed a myxedematous condition together with appearance of a rudimentary menstruation.

4. *Congenital Absence of the Greater and Lesser Pectoral.*—The congenital absence of these muscles is rarely observed. Such a case is described in this article, which contains a beautiful photograph of the case, with a radiograph of the right hand, which shows a curious lack of development in regard to size.

5. *Little's Syndrome.*—The author calls attention to the confusion which at present exists in the group of symptoms known under the name of Little's disease. In 1852 Little published a series of observations relating to the deformity of the human frame. These symptoms had been known before then under the term spasmodic tabes. With the advance in histological study these various symptoms became known as Little's disease. Van Gehuchten has given the characteristics of Little's disease as, first, premature birth; second, spasmodic contractures with absence of cerebral lesions; third, tendency to spontaneous and progressive cure. The whole affection is due to the lack of development of the pyramidal tract. The author gives a critical résumé of these characteristics. In regard to the first, Little's disease has been observed in infants born at term, and has been even known to appear two years after birth. In regard to the second, it is noted that these symptoms are not very well defined and are just as well applicable to the paralyses and paraplegias of infants. It seems almost impossible to imagine a paraplegic contracture or dystrophy without intelligence being indirectly affected. In regard to three, this is not constant at all; while some cases show a distinct tendency towards improvement, others show just the reverse. As to four, the pyramidal tract at best is not completely formed until the ninth or tenth month, as is shown by histological study and by the persistence of the Babinski sign. Nevertheless the average baby does not present in the first months of its life any evidence of contracture or incoördination of the extremities. It is probable that under this term at present a diversity of conditions may be understood and that no definite anatomical or clinical meaning can be attached to it.

6. *The Sense of Attitude.*—A study in the psychology of the sense of attitude, which Bonnier defines as that quality which informs us concerning the relative position of every part of ourself to ourself. Impossible to abstract.

SIDNEY I. SCHWAB.

Rivista di Patologia Nervosa e Mentale.

(June, 1902, v. vii., fasc. 6.)

1. An Anomaly of the Cerebellum. DON. D. ROVEW AND B. DE VECCHI.
2. Complete Ablation of the Thyroid Body in a Dog. G. CORONEDI AND G. MASCHETTI.
3. A Contribution to the Pathogenesis of Exophthalmic Goiter. ETTERE TEDESCHI.

3. *Exophthalmic Goiter.*—The following conclusions are arrived at by the author after a series of experiments on rabbits and dogs:

1. Lesions of the restiform bodies (especially in their anterior portions) produces symptom complex of morbus Basedowi.

2. In animals thus injured the symptoms of the disease are liable to recur again and again in part, or in their entirety, even after they have once disappeared.

3. In animals almost entirely deprived of the thyroid body, lesion of the restiform fails to produce the symptom-complex of Basedow's disease.

4. In animals in whom a lesion of the restiforms resulted in the production of the disease, the excision of the thyroid body causes either a diminution or a disappearance of the greater part or even of all the symptoms of this disease.

ALEX. ROVINSKY.

Neurologisches Centralblatt.

(Vol. 21, 1902, No. 11, June 1.)

1. On Central Eye-Muscle Tracts. J. PILTZ.

2. Spinal or Muscle Atrophies, Which? TOBY COHN.

3. Further Concerning Asthenic Paralysis. E. FLATAU, S. GOLDFLAM.

1. *Central Eye-Muscle Tracts*.—Piltz has studied by means of the Marchi method the secondary degeneration resulting from removal of the cortical areas innervating the eye-muscles of the dog. After removal of the area in the frontal lobe he found degeneration in the neighborhood of the lesion, corpus callosum, anterior limb of the internal capsule, lenticular nucleus, stratum intermedium of the tegmentum, and the internal medial division of the pes. After extirpation of the Munks region F in the parietal lobe secondary degeneration was found in the cingulum, the longitudinal subependymal fibers near the roof of the lateral ventricles, corpus callosum, internal capsule of the same side, optic thalamus, subthalamic region and lateral division of the pes.

2. *Spinal or Muscle Atrophies?*—To be continued.

3. *Asthenic Paralysis*.—Goldflam reports in extenso eight cases of asthenic paralysis and discusses the etiology, pathology, pathogenesis and treatment. In the only case in which an autopsy was obtained, the pathological examination revealed a perfectly normal condition of the central and peripheral nervous system. A lymphosarcoma was found in the anterior mediastinum with metastases into the muscular system. Notwithstanding the involvement of the muscular system in this case and that reported by Weigert, he is inclined to regard the causative factor as toxic, and the symptoms as a result of intoxication of the central nervous system. Thymus therapy in his cases was not at all successful or satisfactory.

(Vol. 21, 1902, No. 12, June 16.)

1. New Contribution to the Pathological Anatomy of Amyotrophic Lateral Sclerosis. A. VON SARBO.

2. On the Direct Antero-lateral Pyramidal Tract. W. G. SPILLER.

3. Fecal Vomiting in Status Epilepticus. H. GOLTZ.

4. Spinal or Muscular Atrophy, Which? TOBY COHN.

1. *Amyotrophic Lateral Sclerosis*.—Von Sarbo found in a case of amyotrophic lateral sclerosis, studied by the Marchi method, marked degeneration of Clarke's columns and also of the direct cerebellar tract; the degeneration of the latter he was able to follow through the restiform body into the superior vermis of the cerebellum. There was also degeneration of the posterior longitudinal fasciculus, the hypoglossal and facial nuclei and the usual lesions found in the spinal cord. He was not able to find the degeneration in the cortex cerebri, as did Spiller in his case.

2. *Ventro-lateral Pyramidal Bundle*.—Spiller maintains the identity of the tract discovered by him and known as the ventro-lateral pyramidal bundle, as distinct from the Helweg's bundle. This position is confirmed by the relation of these bundles of fibers in the spinal cord and has been confirmed by the work of Barnes.

3. *Fecal Vomiting in Status*.—Report of a case of epilepsy in a woman of fifty-one years who during epileptic status had repeated attacks of fecal vomiting. This was considered to be due to a contraction of the musculature of the bowel during the epileptic attack.

4. *Spinal or Muscular Atrophy*.—Report of a border line case of muscular dystrophy or neural atrophy. The case followed the peroneal type, with muscular twitchings and evidence of degenerative changes. The author was unable to arrive at a positive diagnosis between the two conditions.

(Vol. 21, 1902, No. 13, July 1.)

1. Pathology of Tetany. PROF. A. PICK.
2. Silver Impregnation of Axis Cylinders. MAX BIELSCHOWSKY.
3. Hysterical Blindness. H. KRON.

1. *Pathology of Tetany*.—A preliminary notice of a paper to be published in full in the *American Journal of Insanity* concerning the presence of calcification of the smaller cerebral vessels as a causative factor in the production of tetany.

2. *Silver Impregnation of Axis Cylinders*.—A new method for axis cylinders and nerve cell staining. The paper is not suited for abstracting on account of the complexity of the method.

3. *Hysterical Blindness*.—To be continued.

(Vol. 21, 1902, No. 14, July 16.)

1. Subcortical Origin of Isolated Muscular Movements. A Contribution to the Study of Tumors of the Corpora Quadrigemina and Observations on the Central Tegmental Tract. J. SORGO.
2. A New Method of Preparing Histological Preparations. F. REICH.
3. Hysterical Blindness. H. KRON.

1. *Isolated Muscular Cramps*.—To be continued.

2. *Histological Technic*.—Macerated portions of fresh material, or sections of the same are shaken in a test tube and after separating the vessels, the pia, etc., the milky residue is centrifuged and treated by different staining methods.

3. *Hysterical Blindness*.—A report of two cases of hysterical blindness, with a résumé and classification of cases found in the literature. D. J. MCCARTHY (Philadelphia).

Beiträge zur psychiatrischen Klinik.

(1902. Vol. i, No. 2, June.)

1. Analysis of the Ideational Content in Epileptic Dementia. MANFRED FUHRMANN.
2. The Question of the Relation of Bodily and Mental Diseases to Each Other. KOESTER.
3. Contribution to the Knowledge of the Effect of Alcohol on the Motor Functions in Man. HORNING.

1. *Ideation in Epileptic Dementia*.—The researches to determine the ideational content were conducted with three epileptics, the same experiments first being checked with normal persons. The method consisted of reading lists of words and having the patient react by in-

forming the experimenter of the ideas the words read (*Reizwort*) called up. The same process was repeated with the same words not less than four weeks afterwards, and the differences noted, especially the new associations. The number of new associations based on one hundred words gave a percentage indicating the extent of association (*associations-weite*). In the normal individual this percentage varies from 75-95 per cent. varying naturally because of the individual's education; while 60 per cent. and under must without doubt be pathological.

The first patient experimented with showed an extent of association of 62.4 per cent., the percentage being least with abstract words. There was found also a great tendency to the frequent repetition of the same words indicating, the author thinks, a high grade dementia or an inhibition phenomenon like that seen in catatonia. Occasionally the patient responded with great suddenness, before the *reizwort* could have a chance to pass the threshold of consciousness. This the author calls "unconscious reaction" and thinks it characteristic of epilepsy.

The second case showed an extent of association of only 33 per cent. If, however, the experiments are confined to concrete objects the percentage is 44 per cent. as compared with two idiots who respectively showed 40.58 and 46.38 per cent. The simple, trivial, grammatical construction of the sentences used in reacting is also significant of the dementia the *reizwort* being used as subject or object with some simple verb as "is", "has", "gets", etc. The difference between the epileptic and the idiot lies in the fact that the former has knowledge of superior (*übergeordnet*) ideas, and grasps their meaning, making use of them correctly but reacts to these superior ideas as expressed in the *reizwort* in a very simple (*untergeordnet*) manner. The idiot, however, shows nothing of this possibility.

In the third case the extent of association reached 83.7 per cent. but it is noteworthy that this was a case of organic epilepsy (cerebral tumor), the first attack not occurring until the patient was 29 years old and he being able to support himself as a musician until his thirty-fifth year. There was noted in this case a monotony in the reaction, the same word often being used in each of the four series of experiments made to react to the same idea and the same emotional tone being called up by the *reizwort* on each occasion. The simplicity of grammatical expression was also prominent.

In summing up the author regards the "unconscious reaction" as the most characteristic feature of epilepsy. Added to this is the monotony of reaction together with its great slowness, not infrequently amounting to one-half and three-quarters of a minute. Very natural also is the rare appearance of the so-called clang association.

2. *Relation of Bodily and Mental Disease.*—The author, after commenting on the fact that in general intercurrent physical diseases have been held to have a beneficial influence upon existing psychoses, arrives at the following conclusions from a study of several cases. (1) The prognosis of a bodily disease is often unfavorably influenced by a contemporaneous mental disturbance. (2) Commonly the psychosis undergoes a modification due to the influence of the bodily disease which makes its symptoms appear in an unfavorable light so that the bodily disease may appear to have a favorable influence upon the prognosis of the mental disease. This is well shown by the author's fourth case in which the symptoms were of a well marked paranoid type. (3) The prognosis of a mental disease complicated by a bodily disease is independent of the bodily disease as soon as we have to deal with an independent, established psychosis and not a simple symptomatic psychosis. This is illustrated in a patient who had a case of pneumonia compli-

cated by a beginning catatonia. The psychosis, the author thinks, might have been initiated (*ausgelöst*) by the pneumonia.

3. *Effect of Alcohol on the Motor Functions.*—This article was suggested and is in a way supplementary to the article in the first number of the *Beiträge* by Alber. In taking curves of the movements of the leg due to eliciting the patellar tendon reflex the author found that there was often a tendency for the leg to oscillate pendulum fashion before coming to rest. This tendency was increased by anything which distracted the mind (reading) and was also increased by alcohol. It does not occur to any extent in normal persons and the author concludes therefore that it is due to lack of inhibition. The article is illustrated by reproductions of the various kymographic tracings studied.

WM. A. WHITE (Binghamton, N. Y.).

MISCELLANY.

NEURALGIA OF THE BLADDER. G. Frank Lydston. (Jour. Amer. Med. Asso., Aug. 23, 1902).

Crystalgia has been classified as follows: (1) Crystalgia with lesions of the urinary apparatus, *i.e.*, urethra, bladder and kidneys. (2) Crystalgia with lesions of neighboring organs, such as the testicle, prostate, rectum and anus. (3) Crystalgia incidental to ataxia or general paralysis. (4) Crystalgia associated with diathetic conditions, as rheumatism, gout or malaria. (5) Essential crystalgia. Neurotological study is properly directed to the crystalgia associated with diseases of the cerebro-spinal axis. Vertical pains are common in the pre-ataxic period of locomotor ataxia. Crystalgia occurs in the hysterical or chloranemic patients. Neuralgia of the bladder is of variable intensity and radiates in different directions through the hypogastrium, groins, testes, thighs perineum, rectum or back. If definite lesion, such as calculus or other disease is absent, essential crystalgia is to be diagnosed corresponding to neuralgia of other organs.

W. B. NOYES (New York).

AMNESIA. S. D. Hopkins (N. Y. Med. Jour., Aug. 30, 1902).

Amnesia is frequently seen in the various insanities, organic diseases and concussion of the brain, in epilepsy, in somnambulism, in the hypnotic state and following fright. Amnesia may be partial or complete. In the former case memory is only lost to certain objects or groups of objects, without involving other portions of memory; in the latter the memory may be completely lost for both present and past events, as is seen in organic diseases of the brain and spinal cord. A normal mind must not only be able to call up past recollections and to register impressions to which the present attention is called, but also be capable of correlating the present with the past. Inability to do this will produce a form of amnesia known as double consciousness. A case was reported by the author of amnesia from July 4 to September 21, 1900. The patient's last recollection was in a clubhouse near New York. He awoke in Denver, in workman's clothes bought in Philadelphia and Chicago. His hands bore marks of hard labor.

W. B. NOYES (New York).

THE EDUCATION AND DEVELOPMENT OF NEUROTIC CHILDREN. Graeme M. Hammond (The New York Medical Journal, Aug. 30, 1902).

The occurrence of infantile convulsions, chorea, night terrors and kindred disorders during infancy will determine a neuropathic disposition, apart from disease of the parents.

Toward the fifth or sixth year or upwards, the neurasthenic and hysterical temperaments begin to manifest themselves. Exceptional mental ability without corresponding physical strength is sometimes

the early and only manifestation of the neurotic temperament. Precocious and unusually clever children frequently fail to hold their own later on. With the advent of puberty, or even earlier, nervous disorders are most likely to show themselves. Sometimes fretful irritable temper is developed, and migraine or even epilepsy may appear. Masturbation or abnormal sexual conditions frequently begin at this time. The writer believes that the neurotic predisposition, like the tuberculous predisposition, may be entirely eradicated by a proper system of training. The diet of the neurasthenic child should be largely nitrogenous, but no overfeeding should be allowed. These children need to be taught self-restraint, control of the emotions and obedience with more firmness and insistence than is usually necessary with normal children. Mental application should be delayed until after the seventh or eighth year, and mental training generally not begun until the condition of physical health is firmly established.

WM. B. NOYES (New York).

RESECTION OF THE CERVICAL SYMPATHETIC IN BASEDOW'S DISEASE. Belascu (Archiv. f. klin. Chirurgie, Apr., 1902).

The author sets out to determine to what extent the cervical sympathetic plays a rôle in the production of Basedow's disease. Each of the principal and subsidiary symptoms may be shown to have some connection with an irritation of the cervical sympathetic. Exophthalmos, one of the most prominent symptoms, is believed by most authors to be dependent upon a stimulation of the cervical sympathetic, leading to an energetic contraction of the muscular cone, known as Müller's smooth muscle, at the posterior pole of the bulb. If this be true, section of the sympathetic would prevent the exophthalmos, which it does in all cases. The enlargement of the thyroid depends on an enormous dilatation of the vessels of the latter, which in turn is dependent on a stimulation of the vasodilator fibers of the neck and chest. The activity of the vasoconstrictor fibers is inhibited and the dilatation of the arteries causes hypertrophy of the gland. The theory of Jonnesco is that the struma of Basedow's disease is dependent on the increased activity of the thyroid elements and hypersecretion of the gland, which are dependent in turn on the permanent stimulation of the secretory fibers of the thyroid. Whichever of these theories is correct the resection of the cervical sympathetic causing section of the vasodilator, vasoconstrictor and secretory fibers, results in atrophy of the goiter. This in fact occurs in every case. Tachycardia is likewise to be attributed to irritation of the cervical sympathetic. The accessory symptoms seem to be dependent on changes in the circulation of the brain brought about by stimulation of the cervical sympathetic. These symptoms, consisting of tremor, sensations of heat, sweats, gastro-intestinal disturbances, and the nervous excitability so frequently seen in this disease, are, according to Jonnesco, dependent on a permanent cerebral anemia produced by a continuous stimulation of the vasoconstrictor fibers of the cervical sympathetic going to the brain. Extirpation of these fibers leads to cerebral congestion. The various operations on the cervical sympathetic for the relief of exophthalmic goiter are the following: (1) Simple division of the cervical sympathetic; (2) ablation of the cervical sympathetic by means of Jaboulay's operation, which, without a large incision, is devised to stretch and twist the nerve by means of artery forceps attached to its upper and lower ends; (3) simple stretching of the cervical sympathetic; (4) partial resection of the latter; (5) partial and extensive resection; and (6) total resection. Considering the results of the large number of operative procedures for the cure of primary Basedow's disease, the author concludes that total and bilateral resection of the cervical

sympathetic, which is known as Jonnesco's operation, is the most effective. The mere stretching and even the simple division of the nerve do not destroy all the connections of the sympathetic with the thyroid. The partial and extensive resection is applicable in only those cases in which the tachycardia is not pronounced. Although the direct surgical treatment of simple goiter by means of the almost total resection of the thyroid gland is not in itself a dangerous operation, in the struma of Basedow's disease it is very serious and is accompanied by many disadvantages.

JELLIFFE.

A SCHEME FOR THE ANTHROPOLOGICAL EXAMINATION OF INSANE PATIENTS WITH THE RESULTS OF ITS APPLICATION TO CONTROL PATIENTS. E. Goodall (Br. Med. Jour., Oct. 26, 1901).

The author says that the best work has been done in the United States and Italy. The full application of his scheme to ruly patients occupies from three to four hours. He calls special attention to the fact that there can be no intelligible or useful statistics created without a normal standard to judge them by, and this must be gathered from measurements made on normals born and bred in the locality from which the insane come. The main objects of comparing the normal and abnormal standards are as follows: (1) To ascertain what conditions constitute deviations from the normal; this is not yet known. (2) Which of these are most common in the insane. (3) Whether they are grouped about the head and face. (4) Whether there exist stigmata by which the gravity of a case can be measured. (5) Whether there is a correlation of any value between certain stigmata and definite mental disorders. (6) The relation of inheritance to mental disorders. (7) Relation of stigmata to prognosis.

JELLIFFE.

BASEDOW'S DISEASE. C. L. DANA (N. Y. Med. Jour., June 14, 1902).

This author believes that the primary disturbance of Basedow's disease is in the cerebral centers, especially those which control the nutrition of the thyroid and regulate the circulation. In cases where the disease exists there is an almost uniform evidence of neuropathic personal and family history, showing that these centers are constitutionally weak and this weakness is increased by emotional strain and infection. Fevers, sepsis, operation procedures and pregnancy are often followed by this disease, exophthalmic goiter more often following typhoid than the other infectious fevers. The author reports two autopsies after a rather acute course where pathological changes were found in the nerve-cells of the pons and medulla, which leads him to believe that in well-marked cases these changes in the nuclei of the pneumogastric and other nerves are constant and important lesions.

W. B. NOYES.

STUDIES ON NEUROGLIA. G. CARL HUBER (Amer. Jour. Anat., Vol. 1, No. 1).

From studies of the neuroglia of the dog, the cat, the rabbit, the dove, the tortoise and the frog this author concludes that the neuroglia of the spinal cords of these animals is made up of the neuroglia cells and fibers, the protoplasm of the fibers differing chemically from that of the cells, although in all the animals studied this difference was not equally marked. The fibers may be regarded as intercellular in structure, bearing no constant relation to the great majority of cell nuclei or neuroglia cells observed. Using Benda's method, the author has demonstrated that there are some neuroglia cells, usually possessing protoplas-

mic branches, in which the neuroglia fibers are not completely separated from the protoplasm, but are in continuity with it, or even passing through it. The fibers usually follow the course of the protoplasmic branches of the cells. JELLIFFE.

TETANY. SANGER BROWN (Med. News, July 5, 1902).

In the discussion of this subject this author mentions as frequent causes of tetany, thyroid deprivation, due to disease or surgical interference, gastrointestinal disorders, such as diarrhea and constipation, sometimes acute infections, or in women pregnancy and lactation. Sometimes hysteria and epilepsy are found in connection with tetany. Young adults are most subject to this affection and as yet no post-mortem examination has led to any clear comprehension of the nature of the disease. It is always marked by the occurrence of spasms, which usually decrease during sleep. These spasms are nearly always symmetrical, but variable in distribution, and the electrical excitation of both nerves and muscles is greatly increased. Such sensory phenomena as tingling or burning may be present, as well as vasomotor and trophic phenomena, such as edema of the parts of the location of the spasm, as cloudiness of the lens has been observed in some instances. The diagnosis is not difficult in typical cases. The duration of the disease varies from a few hours to months. With the exception of thyroid and pregnancy cases no specific has yet been discovered, and in cases resulting from extirpation or atrophy of the thyroid the treatment is obvious. The presence of a physician is necessary when it is imperative to employ sedatives and antispasmodics sufficient to subdue any violent paroxysm. The general characteristics of the disease are tonic spasms, either paroxysmal or continuous, and ordinarily symmetrical. These spasms are generally limited to the hands and feet, but in severe cases may be more extended. When sensory and general symptoms are present they are almost invariably distinctly subordinate. W. B. NOYES.

FATIGUE IN NON-MEDULLATED NERVES. T. G. BRODIE AND W. D. HALLIBURTON (Jour. Physiol., May 28, 1902).

It has been demonstrated by Waller that while nerve activity is going on there is an increase in the action current, somewhat like that caused by small doses of carbolic acid, and by this he infers that this substance is produced during the passage of the nerve impulse, resulting from the destructive changes in the substances which make up the fatty sheath. He is of the opinion that the gray axis in action both lays down and uses up its own fatty sheath, the process of nutrition following destruction so quickly that the evidence of fatigue cannot be demonstrated. These authors, assuming this to be the case, showed that it would be possible to show evidence of fatigue in non-medullated fibers, and those of the spleen were selected for experiment. The result of a stimulation of these fibers by an electric current was a contraction of the spleen, the volume of which was measured by an oncometer. Water, slightly above the freezing point, was passed through a tube, placed between the electrodes and the spleen, with the nerve resting upon it. The cold prevents the nerve impulses from entering the spleen, acting as a block. After the nerve had been stimulated for many hours the block was removed. When the nerve was again stimulated the contraction of the spleen was quite as vigorous as before the long-continued stimulation, which showed that the non-medullated nerve fibers of the spleen evinced no apparent evidences of fatigue. The authors believe that the "stimulation fatigue" referred to by Howell and others, is the result of polarization of the nerve after prolonged faradization and that an extended

rest must not necessarily precede re-stimulation. Although peripheral fatigue of the nerve-terminals may be readily induced in the spleen it does not nullify the results of these experiments. Stimulative fatigue can be induced in vasomotor nerves, but not in the nerves of the spleen. The transmission of nerve impulses is not barred by stimulation fatigue.

JELLIFFE.

PLEA FOR SIMPLER MEDICINAL TREATMENT OF CHRONIC NERVOUS DISEASE.

JOSEPH COLLINS (Med. News, July 5, 1902).

This writer believes in the proper use of medicine, but calls attention to its frequent abuse. He is of the opinion that in many cases, such as neurasthenia, drugs should only be used to fulfil some pointed indication and substitutes for them exercise, rest, diet, conformation to the rules of health, avoidance of deleterious influences, with massage and hydrotherapy. Epilepsy is best treated by avoiding those experiences which have been shown to precipitate attacks, and putting the system in such a condition that the excitants of epileptic seizures, such as fatigue, autointoxications from the gastrointestinal tract and poisonous products, may be stayed by dieting, attention to the best hygienic measures, massage, suspension, electricity and hydrotherapy, and the patient should be assured that by attention to these measures the approach of incapacity which must eventually overtake him may be retarded for an extended period.

W. B. NOYES.

NEUROSES AS SEEN IN ORTHOPEDIC PRACTICE. B. E. MCKENZIE, M.D.

(N. Y. Med. Jour., July 13, 1902).

Orthopedic practice includes many neuroses of the spine, where no changes in the central or peripheral nerve structures can be discovered. The neurosis may not be the only, and possibly not the chief disease present. After treating any abnormal condition the writer finds that discipline which educates the patient to be self-reliant must be enforced, and systematic gymnastic exercise carried on. The writer's cases present a large variety of these conditions. *Case I*, complaining of pain in the back and head, and inability to exert herself for many months, was cured by isolation from her family and systematic gymnastics. *Case II*, suffering for several years from backache, and symptoms of hip disease, was cured in a short time by gymnasium training, the entire trouble being hysteria. Other cases presented symptoms resembling Pott's disease, multiple neuritis with severe contractures, lateral curvature of the spine with great weakness, joint disease of various sorts. They all recovered under treatment isolating them from their families and instituting carefully selected physical exercises in a gymnasium under a competent instructor, preferably in classes. This treatment is a substitution or modification of the Weir Mitchell system of treatment.

W. B. NOYES.

THE CHANGES IN THE SPINAL CORD AND MEDULLA IN PERNICIOUS ANEMIA. FRANK BILLINGS, M.D. (Boston Med. and Surg. Jour., Aug. 28, 1902).

The writer discusses the characteristic changes in the spinal cord in pernicious anemia, and their resemblance to other conditions of diffuse degeneration. The cause of pernicious anemia is inferred to be toxemia, occurring after pregnancy, syphilis, malaria and fevers, as a rule associated with disorders of the digestive tract. The symptoms are chiefly due to the profound anemia. There are present nervous phenomena, usually subjective, and paresthesia, cerebral disturbance, fixation of the pupils and other nervous phenomena are observed. Spinal cord lesions,

occurring in a small percentage of the cases may appear as one of the earliest manifestations of the disease. Of the author's thirty-six cases paresthesia was noted early in the history, appearing simultaneously in feet and hands. Functional nervous disorder was noted in twenty-four cases. In ten cases a spastic and usually an ataxic condition more or less progressive was noted. In three cases complete flaccid paraplegia with loss of knee-jerk and voluntary bowel and bladder control appeared. Girdle sensation was present in the spastic cases contrary to the usual teaching. In three cases there were pathological changes in the cord with a slight sclerosis or degeneration in the lateral and posterior columns of varying intensity and location. There was no marked degeneration of the gray matter of the root zone, of the root ganglia, and of the brain cortex. The degeneration varied at different heights of the cord. It appeared in one case as a focal degeneration, varying decidedly at different heights, not involving a whole system centrifugally or centripetally. It is apt to diffuse itself from one tract to another, but involves the spinal gray as a rule. The whole nerve is not involved. There are two kinds of degenerative processes—an acute, where the nerve sheath becomes swollen, stretched and filled with debris, but not usually associated with an increase of the neuroglia. These lesions of the spinal cord have been attributed to multiple hemorrhages, thickening of the walls of the blood vessels, acute myelitis, primary changes in the gray matter, to anemia, or to a toxic agent. The writer's conclusions are as follows: (1) That there is a well-established relation of diffuse cord degeneration with pernicious anemia. (2) It seems highly probable that the hemolysis and the cord changes are due to the same toxin. (3) While the source of the toxin is unknown the fact that gastro-intestinal disturbance is so common in the disease would lead one to suppose that it is intestinal in origin. (4) The diffuse degeneration of the spinal cord which occurs in conditions without pernicious anemia, does not appear to differ essentially from those of pernicious anemia. (5) It is possible that a common toxin exists as a blood circulating poison in one individual, acts upon the nervous apparatus in another, and coincidentally upon the blood and spinal cord in others.

W. B. NOYES.

THE NERVES OF THE HEART. HORACE H. HOPPE, M.D. (Jour. Amer. Med. Asso., May 24, 1902).

A nervous affection of the heart is caused by a faulty condition of the nervous system locally in the heart, the nerves leading to the heart, their center in the medulla, or by a derangement of the nervous system as a whole, as in neurasthenia and hysteria. While the heart is rich in sensory fibers and ganglionic cells, there are no motor fibers nor motor centers. The teaching of the action of the vagus and sympathetic has been modified. The motor stimulus comes from the blood itself. The rhythm of the heart action is automatic, but it can be diminished by influences, chemical, physical or psychical in character, coming either through the sympathetic nerve, or from the vagus. The three kinds of neurosis of the heart are: (1) neurasthenia cordis; (2) tachycardia; and (3) bradycardia. Of neurasthenia cordis we have (a) typical neurasthenia of the heart; (b) arrhythmia of the heart; (c) pseudo-angina pectoris; (d) nervous bruit. The first has besides ordinary neurasthenic symptoms, cardiac hypochondria or fear of heart disease based on local precordial sensations, produced by palpitation, irregularities or pain. Fear is a predominant psychic element here as in other forms of neurasthenia. Palpitation is frequent, due to chemical or mechanical conditions of the stomach. It is often associated with a severe sense of constriction of the throat, or dysphonia. The typical neurasthenic heart is

weak, irritable and easily exhausted. Dilatation may easily occur. Arrhythmia cordis is a condition where irregular or intermittent rhythm occurs even in the absence of all excitement. The most frequent cause is a diseased condition of the coronary arteries or myocarditis. It is not common in neurasthenia with marked vasomotor disturbance, and varies with physical or mental excitement. The nervous ganglia and nerves of the heart being purely sensory, may produce besides disturbances of sensation, distinct pain, either in paroxysms or more or less constant. This is a nervous angina pectoris. Coronary disease is often absent. In most cases the pseudo angina is a neuralgia and entirely functional. It occurs independent of effort, often in the night, associated with other signs of neurasthenia. Tachycardia may occur as a pure neurosis, independent of all signs of dilatation or other disease of the heart. It may be due to irritation of the sympathetic. Bradycardia is rare as a pure neurosis; it may be reflex from gastro-intestinal disturbances, and occurs in paroxysms. It is best treated by sedatives, such as bromides, asafoetida and valerian.

W. B. NOYES (New York).

ACUTE ASCENDING PARALYSIS IN BASEDOW'S DISEASE. M. ROSENFELD
(Berlin. klin. Woch., June 9, 1902).

Regarding paralysis of the extremities occurring in Basedow's disease, to which Charcot and Mackenzie called attention, as occurring without loss of sensation, weakness of the bladder or muscular atrophy, this author relates the history of a case where the cachectic period of the disease began with an acute ascending paralysis, following a course similar to that of Landry's disease. Although the patient had been ill for two years, suffering during one year with exophthalmos and extreme nervousness, he had continued at work without interruption. On the day of the attack he experienced nausea and headache in the morning and later in the day lumbar pains and a feeling of weight in the lower extremities. The next day pain and weakness compelled the patient to stop work, but there was no fever and the cranial nerves and sensation were normal, as well as the movements of the upper extremities, although walking or standing was impossible. The right leg was absolutely powerless and the patellar reflex absent, but the left leg could be moved a little and a slight reflex obtained on that side. The bladder and rectum remained normal and the chief complaint was of lumbar pain radiating to the extremities. After a few hours the power of sitting erect was lost, while the arms could only be moved with difficulty, and before night there was complete paralysis of the arms and the head could not be moved. There was slight motion in the fingers but the bladder was paralyzed, although respiration continued normal without loss of consciousness. The next day voluntary motion of the extremities returned but a rapid loss of weight ensued, together with an increase of all the usual symptoms of Basedow's disease and a permanent loss of muscular power. This attack was followed by two others which were neither of them as severe as the first. Hysteria may be excluded on the following grounds; the prodromata, the severe collapse at the outset of the paralytic attack, the paralysis gradually ascending, the disappearance of the right patellar reflex during the paroxysm and the existence of a light paresis of the right leg with diminished reflex after the attack.

JELLIFFE.

Book Reviews

ANATOMIE DES CENTRES NERVEUX. Par J. DEJERINE et MADAME DEJERINE-KLUMPKE. Tome deuxième. Fascicule 1. Avec 465 figures dans le text dont 180 en couleurs. Paris, Rueff, 1901. Price 32 frcs.

The work which I reviewed over six years ago in this Journal, has found its continuation. The first half of the second volume lies before us, containing as second part the chapters on the projection fibers of the cerebral cortex-mantle and rhinencephalon (p. 1-304), the infracortical ganglia, corpus striatum, optic thalamus and subthalamic region (p. 305-411), and the cranial nerves derived from the forebrain and interbrain—the olfactory and the optic (p. 412-435). The third part deals with the rhombencephalon; the first chapter with its general morphology (p. 436-503), the second with its inner configuration (p. 504-586), the third with a description of serial sections (p. 587-690), and the fourth with the finer texture (p. 691-720).

Like its predecessor, the volume is gorgeously illustrated with fine original drawings usually representing entire series, or in the case of the numerous pathological brains with secondary degenerations, at least the most important levels. Taken altogether, the volume is a representation of the richest collection of studies of secondary degeneration ever made the foundation of a monograph. Fifty-three cases underlie the descriptions and conclusions concerning the cortico-thalamic connections. In some of them, it is true, one would have liked the entire material presented to make it more conclusive, as, for instance, in case Prudel p. 101 the depth of the hemisphere-lesion to explain the question of decay of the pulvinar in view of the integrity of the calcarine area and fusiform and lingual gyri, since very important conclusions are built on other facts in this case. Besides the anatomical facts, there is a very good summary of the chief data of localization of function in the cortex and in the internal capsule. In the latter, D. especially insists on the error of Charcot of attributing a complete hemianesthesia to the "carrefour sensitive," the posterior end of the internal capsule. What Charcot described was hysterical hemianesthesia (including smell, taste, hearing and amblyopia, not merely hemianesthesia). Capsular hemianesthesia is either due to simultaneous lesion of the thalamus termination of the fillet and the corresponding thalamo-cortical radiation, or to lesion of the thalamo-cortical connections to the kinesthetic area of the cortex.

Among the more important anatomical statements the following may find a place in this brief review:

The crus cerebri contains no fibers from the corpus striatum; the inner portion comes, not from the entire frontal lobe, but from the central operculum and the foot (insertion) of the 3d frontal convolution; and the bundle of Türck comes from the middle portions chiefly of the second and third temporal gyrus, while the pyramidal tract occupies the middle three-fifths of the crus.

Among degenerations, D. points out the existence of cellulifugal and cellulipetal degenerations, and indirect or secondary atrophies, and further "atrophies en masse" of the homolateral half of the brain-stem

and the crossed side of the cord, and compensatory hypertrophy of the healthy side of the crus and pyramids. With the Marchi method cellulifugal degeneration is visible before the cellulipetal decay which "rapidly diminishes in intensity as one gets away from the lesion" (at variance with Bregmann).

The connections of the rhinencephalon, fornix, and corpus striatum and thalamus receive a specially full description and illustration. The fasciculus occipito-frontalis is maintained as a real occipito-frontal association-path. The globus pallidus and corpus Luysii are shown to have some connection with the cortex. The ansa lenticularis receives a new description at variance with that of Edinger and Flechsig, on ground of Marchi specimens. The existence of Gudden's commissure in man is denied. The description of the thalamus and its connections are very carefully done.

The rest of the volume contains the well illustrated systematic description of serial sections of the hind-brain. The second part, including the anatomy of the spinal cord, is in press.

The second volume greatly surpasses the first one in a wealth of new observations and demonstrations of pathological anatomy, and makes us wish that the authors may be in a position to soon finish the work, which, together with the "Sémiologie" is a wonderful monument of the co-operation of a brilliant French scholar and his equally brilliant American wife.
A. MEYER.

TRAITÉ DES MALADIES DE LA MOËLLE ÉPINIÈRE. By J. DEJERINE and ANDRÉ THOMAS. J. B. Baillière et Fils, Paris, 1902.

One may well be surprised that Dejerine's name should be found as the joint author of a book on clinical neurology so soon after the appearance of his "Sémiologie du système nerveux," but in the work published in collaboration with André Thomas the subject is presented in the more customary manner, in that each disease of the spinal cord is treated as an entity, and the viewpoint is not one of symptomatology. Syphilis of the spinal cord is omitted because the article by Dejerine and Thomas forms a part of Brouardel and Gilbert's "Traité de médecine et de thérapeutique," in which syphilis is considered by other writers.

In Dejerine and Thomas' book the plan of illustrating adopted in the "Sémiologie" has been followed, and the numerous pictures are presented with full explanatory legends, so that much information can be gained by a careful examination of the illustrations and their accompanying legends.

A brief consideration of anatomy, physiology, pathology and general symptomatology opens the way for a presentation of the individual diseases. The latter are divided into the secondary affections of the spinal cord (compression, Pott's disease) and into the primary affections of the cord (myelitis, tabes, etc.).

In many places where disputed questions are discussed the views of different authors are fairly given, occasionally without any attempt to determine which views are correct. This is doubtless wise, because a presentation of facts where a positive conclusion is impossible, is all that can be expected. In other places, however, Dejerine and Thomas state their own convictions clearly.

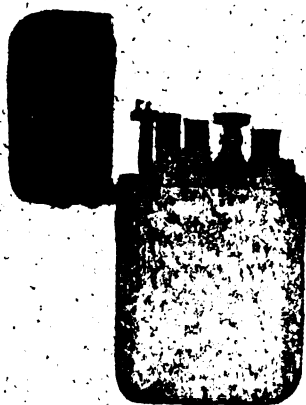
Under the title of Little's disease a historical account of the affection is given, and the limitation placed by certain authors in their description of the symptom-complex is mentioned. The views of most of the prominent writers on this much-disputed subject are clearly set forth, so that the chapter contains almost all that is now known regarding Lit-

tle's disease—a term not very frequently by no means unknown. Dejerine has shown Little's disease, or "congenital spastic" purely of spinal origin, and Dejerine and the symptom-complex of Little in some lesions, in others by spinal lesions, and the symptoms are capable of amelioration distinguished from the unimprovable seems proper.

In regard to Landry's paralysis Dejerine has shown an affection of the peripheral motor nerve bodies of origin or the axis-cylinder process is either poliomyelitis or polyneuritis. It is however, only a symptom-complex.

Chronic anterior poliomyelitis in the Dejerine type has sought to exclude the disease. It is included under the name of progressive atrophy of the cell-bodies as syringomyelia, amyotrophic lateral sclerosis, or peripheral neuritis, but they assert that the disease may result from atrophy of the cell-bodies and alteration of the pyramidal tracts. They assert that amyotrophic lateral sclerosis is to be distinguished from atrophy of the Aran-Duchenne type, or congenital paralysis of Duchenne;—on the contrary lateral sclerosis as a distinct disease.

It is not necessary to add that this book will prove valuable to all interested in neurology.



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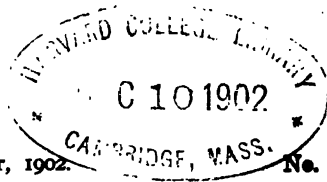
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THE
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Original Articles.

REMARKS ON ACUTE MYELITIS, AND REPORT OF A CASE
OF TUBERCULOUS MENINGO-MYELITIS.

By JOSEPH COLLINS, M.D., NEW YORK.

(FROM THE PATHOLOGICAL LABORATORY OF THE NEW YORK STATE HOSPITALS,
DIRECTORSHIP OF DR. IRA VAN GIESON.)

The question whether acute myelitis is a rare disease or not may be answered in the affirmative or the negative, depending entirely upon what is included under such a designation. If we include acute transverse myelitis, acute diffuse myelitis ascending and descending, acute disseminated myelitis, acute anterior poliomyelitis, as Leyden and Goldscheider do, it is the commonest disease of the central nervous system, for it takes in diseases which are well recognized as either pathological or clinical entities, such as infantile paralysis, Landry's paralysis and acute hemorrhagic softening associated with disease of the blood and the vessels. It includes also the destructive lesions accompanying trauma, diminution of atmospheric pressure (caisson disease), and disease of the abdominal aorta leading to occlusion, and obliteration of the vessels leading to softening. From the clinical standpoint these cases are truly myelitis. But if we make circulatory manifestations of inflammation the criterion by which to judge whether or not there is any inflammation, many of these conditions must be excluded. For instance, softening resulting from trauma, obliteration of the vessels, diseases of the blood such as anemia, edema, inflammatory or other-

wise. From a pathological standpoint, however, such conditions are to be differentiated by the absence of changes in the circulation typical of inflammation. If they are differentiated, and not included under the caption of acute myelitis, then the disease is extremely rare. If they are included—and they are usually clinically, for they can not be distinguished by the clinical picture alone, then the disease is, as has just been said, not uncommon. Whether or not it is a common disease differs also with our conception of acute myelitis from an etiological standpoint.

If we consider acute myelitis to be an inflammatory state of the spinal cord due to infection or intoxication, the morbid process being caused either directly by the action of the microbes and their toxins acting upon the medullary parenchyma, or indirectly through the circulatory system, then the disease is really very rare. As a matter of fact, primary acute myelitis (leaving out of consideration anterior poliomyelitis), whether it be transverse, diffuse or disseminated, is a rare disease and nearly always due to infections or intoxications.

The infectious organisms that produce such myelitis are numerous. Those that have been found in the inflammatory focus are the streptococcus, the staphylococcus (at least two varieties) the pneumococcus, and a special diplococcus described by Buzzard and Russell. In the case described herewith, one of acute meningo-myelitis, the tubercle bacillus was found in the inflammatory focus.

Mere enumeration of the acute diseases that have been closely followed by myelitis, and with which it is safe to assume the myelitis stands in causal relationship, shows that the number of organisms capable of causing myelitis is not exhausted by those above mentioned. Thus it has been shown that myelitis follows tonsillitis, dysentery, erysipelas, typhoid fever, gonorrhea, cystitis, puerperal fever, pneumonia, influenza, rabies, tetanus, phlegmonous paronychia; to mention no others. Undoubtedly, in many instances the germ itself does not produce the disease, but the toxins which they manufacture cause it. It is not safe however, to assume that the germ does not cause the disease *per se*, and by its local action, because it is not found in the focus after death, for it is well known

that the germ begins to disintegrate and disappear the moment it has exercised its malign effect. The fact that the germ is sometimes found on microscopical examination, as it was in the case reported herewith, shows that at least some of the cases of acute inflammation of the cord are dependent upon the immediate presence of the organism itself.

The patient whose history I present was admitted to the City Hospital April 19, 1898. She was a Polish Jewess, twenty years old. So far as could be learned, her family history was negative. Her personal history was likewise uninteresting: a hard-working, underfed corset-maker, who denied the use of spirits and in whom there were no evidences of venereal infection. When a child she had measles, but since then she had been entirely free from illness. Her first child was born in the hospital two months after the onset of the illness which caused the patient's death. This illness began about three months before its fatal termination. She said that the first manifestation of the disease was that one morning on arising the right hand "was sore," which being interpreted means that the second metacarpo-phalangeal articulation was red and swollen, and that the finger could not be moved because of the swelling and of the pain which attempts at movement caused. Even when the extremity was at rest, this joint was the seat of sharp, stinging pain. This pain continued for two or three days; then the right elbow became painful and somewhat swollen. The pain and swelling subsided slowly, and after a day or two the right shoulder became affected in a similar way. In two or three days the swelling and pain of the shoulder began to subside, and then she complained of pain in the middle of the back. The pain and stiffness of the back were not so unbearable as the pain in the other joints. Moreover, they disappeared in a few days. The anterior surface of the right thigh and the right groin then got painful. Later, the right knee became stiff and swollen, and she soon was unable to walk or take care of herself. She was then taken to Bellevue Hospital and remained there for three weeks under treatment for rheumatism, she said. The record of her case while in that institution has not been seen, but when she was transferred to the City Hospital from Bellevue it was noted there was a bed sore over the sacrum, one over each iliac crest, one over the anterior superior spinous process, one over the left trochanter, and one over the right knee. All these sores were extremely painful, especially that on the back. From all of them pus discharged freely. She re-

mained in the ward to which she was at first admitted for a short time only, for it soon became apparent that she was about to give birth. She was transferred to the Maternity Hospital, and was delivered of a child that is now alive. She had no labor pains, but during the birth she complained of great pain in the joints, due apparently to inability to separate the legs and to remain on the back. A few days after her confinement she was sent to one of my wards, where the following notes were made:

"The patient who is extremely emaciated, lies on the back, the feet and toes semi-flexed, and the knees and thighs firmly flexed. When attempt is made to overcome the flexion the patient complains bitterly. The legs and thighs are very much wasted. [This was not considered other than part of the general emaciation, although it is very probable that it was likewise due to disease of the ventral horns which was afterwards found.] The knee-jerks can not be elicited, nor can the spasticity of the legs be overcome. The absolute fixation of the lower extremities is thought to be due in great measure to involuntary efforts at restraint to avoid the pain that movement causes. The patient is wholly unable to move any part of the lower extremities, but she complains of painful twitchings of the muscles and of uncontrollable drawing up of the legs. She is incontinent of urine, most of the time, but the rectal sphincter seems to functionate normally. There are no elicitable disturbances of sensibility. [It was difficult to be certain of this on account of her fear that she was going to be hurt by the examination.] The sore on the back, over the sacrum, is as large as two hands and it has destroyed the soft tissues down to the bone. The finger or probe can be admitted for a distance of from three to four inches. This procedure is very painful, causing liberal discharge of pus, just as if a new well had been opened up. The other bedsores enumerated above are of the extremest kind. The upper extremities are emaciated and slightly rigid, but not devoid of voluntary power. There is no deformity of the spine. The cranial nerves are unaffected, and the patient gives a lucid account of her illness." Careful examination of the thoracic and abdominal viscera failed to reveal anything pathological. When first admitted to the hospital, the records show that she was without fever. About two weeks before death she began to have rigors and irregular elevation of temperature, and to show the customary phenomena of septicemia.

Autopsy eight hours after death. The body is in the same fixed position, especially the lower extremities, that it was *ante mortem*. The bed sore of the posterior surface of the sacrum

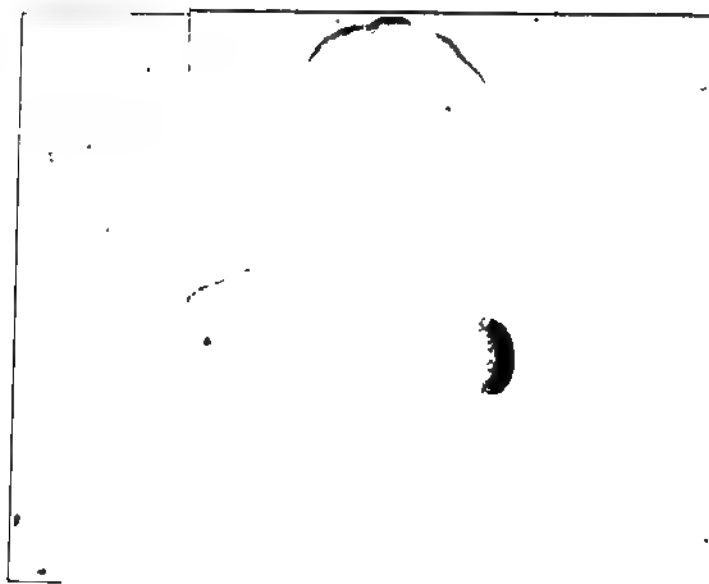


Fig. 2—Second 4—Swollen homogeneous ventral horn cells. Beginning anterior horns angulation of the achromatic substance. Disappe

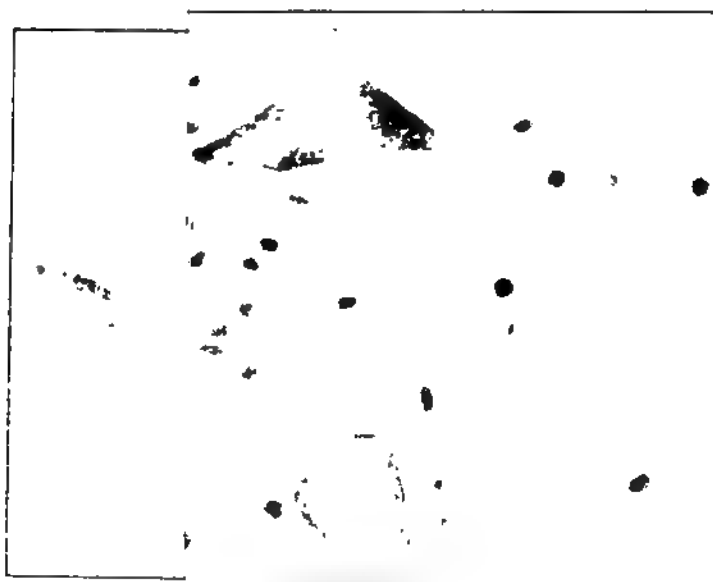


Fig. 3—Second 5 Fifth lumbar 1 To show swollen condition of anterior horns and homogeneity

exposes the bone. On opening the spine, the canal is lined with pus up to the second lumbar vertebra. From this point upward between the pia and dura is a freshly organized layer of greenish yellow exudate, apparently made up of fibrin, pus, and coagulated serum. This layer reaches up through the foramen magnum along the base of the brain and over the optic chiasm. The brain itself is apparently normal. The consistency of the cord is diminished throughout, and from the sixth to the ninth dorsal segments it is so soft that it flows on being cut. The cord was divided into segments and every other one hardened in alcohol and Müller's fluid respectively, preparatory to methylene blue, hematoxylin and carmine stains. Examination of the viscera showed dilatation of the heart, both the right and left sides, and slight fatty degeneration. The lungs were free from tuberculosis. The kidneys were in a state of interstitial and parenchymatous degeneration. No tuberculous foci were found in the thoracic or abdominal viscera.

The changes in the spinal cord on microscopical examination were of variable intensity and distribution. They were most marked in the eighth and ninth dorsal segments, wherein they constituted a focus of central myelitic destruction, surrounded by an annular area of myelomalacia, and were least marked in the cervical cord wherein they consisted of slight perivascularitis, proliferation of neuroglia nuclei, and increased connective tissue formation, both from pial prolongations and from the vessels. The changes in the lumbar segments were most conspicuously evidenced by changes in the substance of the parenchyma. From one end of the cord to the other, the dura was the seat of profound productive inflammation, particularly that portion of it surrounding the posterior segment. The pia was likewise the seat of an exudative and productive inflammation, but it was not implicated so profoundly as the dura.

A number of sections from the different levels of the cord will now be considered in detail, and as the lesion was most intense in the dorsal cord, I shall describe first the changes at this level. The sections made from the eighth dorsal segment and stained according to Weigert and Pal's method show a central area of necrosis, limited in front by the commissure which in some sections is partly; and in others almost wholly destroyed. It is probable that this complete destruction is artificial, as it was very difficult to cut and handle these sections, on account of the destructive changes that had gone on in them during life. Posteriorly, the punched-out area extends about one-third of the distance to the posterior border of the cord. The margin of the focus is made up of detritus and beyond this

is an area varying in each section, made up of enlarged and thickened blood vessels, and proliferation of connective tissue with conglomeration of round cells in the perivascular spaces. The pia is very much thickened, especially on the posterior and lateral surfaces of the cord, and sends comparatively few prolongations into the substance. The enormous exudative and proliferative change on the free surface of the pia is very conspicuous in this section. One of the sections from this level stained according to the method of Zeihl, revealed the presence of the bacillus of tuberculosis in the center of a bit of homogeneous material at the margin of the focus of destructive myelitis.

Fig. 1.—Eighth dorsal, showing central myelitic focus and a colossal meningeal involvement.

This section was given to the artist to be drawn, but it has been misplaced. The existence of the bacillus was corroborated by Dr. Onuf, by Dr. Harlow Brooks, and others of the staff at the Pathological Institute. No bacilli were found in the meningeal exudate, although many specimens were stained with this end in view. Sections from the lower dorsal levels stained with methylene blue show that the changes in the ganglion cells are those of advanced diffuse chromatolysis. (Here it may be said that the term chromatolysis is used only to mean disintegration of the chromatic particles of the protoplasm.) In some of the cells this chromatolysis is principally peripheral, but in the most it is perinuclear or diffuse. The achromatic part has suffered as well. In many of the cells there is complete disappearance of

the achromatic fibrillæ, while in others there is absolute plasmolysis. The cells that were particularly affected at these levels were those of the internal groups of the anterior horns. It is now generally accepted that chromatolysis is the reaction of the cell to a disturbing force and is reparable, while alteration of the achromatic part is degenerative and irreparable. This view is entirely in keeping with the findings in the dorsal segments in which the cell-bodies have lost not only the chromophile but have undergone plasmolysis. The changes of the cells in the upper dorsal and cervical cord are in a measure those that would occur in every spinal cord that had been subject to injurious influences.

Sections from the twelfth dorsal segment, stained according to Weigert, show complete disappearance of the central area of myelitis, but this part of the cord has the appearance of being brittle, and was difficult to section without breaking. Sections from the first lumbar segment stained with Van Gieson's picro-carmin, show thickening of the meninges and the inflammatory exudate. The most noteworthy revelation of this stain, however, was the condition of the blood vessels of the anterior horns; these vessels were seen to be in a state of congestion with resulting transudation and diapedesis, which in part at least conditioned the changes in the ganglion cells of the cord revealed by Nissl's method, which I am about to describe. The degeneration of the white matter of the cord caused by the accompanying meningitis, and revealed by Pal's method, is particularly evident in this and in lower levels of the lumbar cord. Lissauer's column suffered most severely. The central posterior columns were so brittle from the extension of inflammation into them that it was scarcely possible to cut a section without crumbling this part of the cord.

Sections from the various lumbar segments stained with the Nissl stain showed a paucity of cells and a variable degree of degeneration and disintegration of the cell-bodies and processes of the anterior horn. From three to five cell-bodies of each anterior horn were the seat of well-marked degeneration. In some this is so extensive that there is no longer any similarity to normal in the cell-bodies affected, while in others the degeneration is extremely variable. Some of the largest cell-bodies had apparently undergone complete homogeneous transformation, while others show at the periphery narrow marginal lines made up of dots which take a deep blue color, evidently the remains of chromophilic granules. The processes of the cell-bodies show a degeneration very similar to that of the bodies. For instance, some of the processes have the appearance merely of a colorless

thread whose continuity, however, can be distinctly traced, but only in one or two places throughout its entire length is there anything like a color dot or spot. Other processes are degenerated at the terminal ends, while the part in connection with the cell-body itself still retains some of the normal longitudinal striation. The cell-bodies which are only partially degenerated preserve to some extent the normal tiger-hide appearance. They have merely undergone some homogeneous transformation which renders them non-receptive to the Nissl stain. The cell-bodies that are least affected show merely an enlargement of the colorless space which normally surrounds the nuclei, and a partial disappearance of the tiger-hide and dotted appearance. The changes in the nuclei of these cell-bodies are variable. In some the nucleus has disappeared, in others it has changed its location from the center of the cell-body, where it is ordinarily found, to the periphery.

The changes in the cell-bodies of the anterior horns of the cervical spinal cord are, especially in the lower segments, very similar to those in the lumbar region, though less pronounced. In the upper cervical cord the structure of the cell-bodies constituting the different groups is not materially altered, despite the fact that the blood vessels of the anterior horns are thickened, the peri-arterial spaces much enlarged, and the neuroglia very much increased. As we proceed downward in our examination of the sections through the cervical cord, we find various manifestations of pathological changes in the cells of the anterior horns. At first there is evidence that the chromophilic granules in many of the cells are large and stained very deeply, while the achromatic substance is quite normal.

Sections from the cervical cord stained with hematoxylin show most strikingly the enormously thickened pia which at these levels is implicated most profoundly over the anterior surface of the cord. This thickened pia extends down the anterior median fissure forcing it widely apart, especially at the bottom, where the pia lies in thick folds extending laterally beneath the columns of Türeck, and thence sending prolongations which extend into the anterior horns, the anterior horns themselves being the seat of numerous blood vessels of enlarged caliber and thickened walls. The cell-bodies of the anterior horns from this level when stained with methylene blue show various stages of disintegration in the chromatic substance, with relative preservation of the achromatic substance. In a few sections a blood vessel of the anterior horns cut longitudinally is apparent, and in this diapedesis of the corpuscles can be readily seen. The walls of the blood vessels show very great thickening, especially the internal coat.

As we approach the dorsal region, the cell-bodies of the anterior horns show more marked degenerative changes and are very few in number. A remarkable feature of the cord at this level is the relative preservation of the cell components of Clarke's column. In other sections in which there is conspicuous vascular change in the pial proliferation, the cell-bodies of the anterior horns are relatively well preserved. That the inflammatory process in the meninges of the cervical cord was a relatively recent process, was shown by the fact that although many of the posterior roots at one level or another are completely surrounded and strangulated, as it were, by the thickened meninges, there is despite this very slight ascending degeneration in the posterior columns.

To summarize the clinical history and pathological findings in this case: a young married woman, four months pregnant, is taken ill without attributable cause, with symptoms of acute inflammatory rheumatism. After three weeks, the symptoms subside and are followed by such indications of acute myelitis as motor paralysis of the lower extremities, incontinence of urine, pain in the back and extremities, spasmodic twitchings and contractions of the legs, and enormous bedsores and other associated trophic disturbances. Soon after she gives birth to a living child, the labor being painless. From this time onward the symptoms of meningeal involvement which heretofore had not been conspicuous, become extremely evident. Later, the manifestations of sepsis precede death. On autopsy there is found an extensive purulent and productive leptomeningitis and inflammation of the spinal cord, particularly of the lower dorsal segment. Microscopical examination of this area shows that the focus of most extensive myelitis, consisting of absolute destruction of an area of the central gray matter surrounded by an annular area of myelomalacia, is confined to the seventh, eighth and ninth dorsal segments. The pathological changes in the cellular elements of the cord at these levels are those of extensive, diffuse chromatolysis and plasmolysis, while the changes in the vascular tissues are those of infective inflammation; and those in the white matter of the cord, those of simple inflammation and production of connective tissue. In one section of this level the bacillus of tuberculosis was found imbedded in a mass

of caseous necrotic tissue. In the lumbar and cervical segments where there were no evidences of infective inflammation, the cells of the gray matter were found in various stages of chromatolysis, the chromatic substance bearing the brunt of the lesion. Judging from the associated vascular involvement, and the production of neuroglia and connective tissue, the result of marked involvement of the meninges at these levels, these changes in the integral structure of the cell-bodies were the result of these pathological accompaniments as well as of the infectious process which had destroyed the cord at another level.

It seems to me that an interesting point for discussion is the relationship of the rheumatic attack, if rheumatism it really was, to the occurrence of the tuberculous myelitis. Furthermore, it would be interesting to know whether the changes in the cells of remote portions of the cord, constituting chromatolysis, were secondary to the tuberculous infection and the septicemia which immediately conditioned the patient's death, or whether they were the result of nutritional changes due to disease of the blood vessels and impairment of nutrition secondary to the extensive productive inflammation of the meninges.

Personally I am inclined to the view that the patient did not have acute inflammatory rheumatism, but that the pain in the extremities and swelling of the joints which were early symptoms were the result of tuberculous infection of the cord, which implicated in the beginning that part of the cord in which is situated the central representation of the sympathetic nervous system,¹ and that the entire early symptomatology can be explained on this supposition. The symptoms next to develop were the classical ones of slowly progressing acute myelitis, such as the tuberculous variety almost always is. Later, the symptoms of meningitis were superimposed, and they obscured somewhat those due to inflammation of the cord itself.

I reserve further discussion of the pathological features of this case until the publication in this Journal of another article on myelitis.

¹See article by Onuf and Collins on this subject in the *Archives of Neurology and Psychopathology*, Vol. iii, Nos. 1 and 2.

REPORT OF A TRANSVERSE LESION OF THE MID-THOR-
ACIC SEGMENTS LEAVING INTACT THE POSTER-
IOR COLUMNS, AND CAUSING SYRINGOMYELIC
DISSOCIATION¹.

By ADOLF MEYER, M.D.,

DIRECTOR OF THE PATHOLOGICAL INSTITUTE, WARD'S ISLAND, NEW YORK.

(From the Worcester Insane Hospital.)

Gowers mentions a case of his own and one of Müller's in which definitely limited regions of the spinal cord were destroyed so as to produce a dissociation of the various sensory qualities. Their cases had the advantage of being unilateral or partially unilateral lesions throwing light on the question of homolateral and contralateral interference with sense qualities. Our own case is less advantageous since the lesion is fairly symmetrical, but it forms in many respects the negative of the case of Müller.

Gowers saw after destruction of the ventral two-thirds of one side of the third cervical segment and mere "swelling" of the posterior column entire loss of sensibility to pain on the opposite side without any impairment of tactile sensibility.

Müller, in a case in which exactly the parts were severed which were intact in Gowers' case (both posterior columns and the rest of one-half of the cord), found loss of tactile sense on both sides and loss of pain sense opposite to the lesion.

In our case there was a destruction of practically the entire cross-section of the fourth to sixth thoracic segment, leaving intact only the dorsal two-thirds of the posterior columns and a few pyramidal fibers. Clinically the case presented for probably two years before death:

Normal tactile sensibility, pressure sense, tickle sense and sense of position.

Analgesia and thermanesthesia below the sixth rib on the right and the fifth rib on the left.

A zone of slight thermo-hyperesthesia over the fourth rib.

¹Read at the annual meeting of the American Neurological Association, June 5, 6, and 7, 1902.

Girdle feeling (occasional) around the level of the umbilicus.

Paralysis below the thorax (allowing but a slight pull on the upper end of the rectus abdominis, and occasionally a slight pull on the thigh and also slight movement of the right toes).

Occasional involuntary pulling up of the thighs, at times accompanied by shooting pain.

The following is a summary of the clinical record of Dr. R. R. Gurley, and a statement of the anatomical findings (sections made by Dr. C. B. Dunlap).

The father of the patient died with general paralysis in a status epilepticus (intemperance and fast life).

Born 1857, of Protestant parentage, the patient went to school up to seventeen, and afterwards worked in a grocery store, and later in a large dry goods store of the West. He led a very fast life, both with regard to alcoholism and to venery, but did well in business. Several not further specified venereal infections.

In 1893 the patient began to feel "leg weary" at night, and at times would have an acute lameness in the legs, which would pass off. Winter 1893-94 one night his legs suddenly gave way, but the next day he was "as well as usual," and in a week resumed work, but was noticed to drag his left foot and frequently felt weakness and at times temporary numbness (it is not said whether motor or sensory). In the spring, 1896, he had influenza and double otitis. He came East in July devoid of ambition and interest, somewhat dull and dazed; he seemed to want to sleep all the time and walked with a couple of strong canes. After a short stay at the seashore he showed complete *defect of memory* of this outing, unless he was reminded of things, and he had much more difficulty in getting about. Since then he would often fall asleep in his chair for hours, snore vigorously and awake in a dazed condition. He began to fabricate, excused himself, thought the family had mixed him up. In the course of the winter he became more helpless. From February 1898 he required crutches, but still attended to the calls of nature. His memory seemed good for days previous to his coming East. All idea of time calculation since then was lost. He would not remember what he read, even if he had just laughed heartily over it.

Shooting pains began to appear combined with marked twitchings of the legs, which at times made sleep almost impossible. The legs would jerk upward, the left leg always higher and more briskly than the right, and fall back lifeless.

From March, 1898, he could not feel the passage of the feces. He began to soil the bed and finally preferred to sit on the stool all the time, because he forgot when he had had a passage, and continually asked for the stool again. A ring of inflammation, and finally decubitus formed on the buttocks, totally devoid of pain. The left leg was earlier affected, without power and seeming dead. There was also marked girdle pain—"a feeling of a bar of hot iron around the waist"; in April the legs felt like blocks of wood, except for occasional pains; the feet felt cold and the attendant had to rub them often. About April sixth he had the first trouble with micturition; "the water would come in drops." The patient became depressed, spoke at times of locomotor ataxia, was somewhat restless, at other times he was cheerful; the memory remained very poor. Friends whom he saw almost every day he claimed daily not to have seen for years. He claimed to have attended to business during the last two years, "had arrived in Boston a few days ago."

On admission, April 19, 1898, the patient appears with a bright, intelligent countenance and pleasant manner. He speaks without hesitation, and pursues an interesting and rational stream of thought beyond occasionally telling the same story twice or even four times within fifteen minutes, every time with the same pleasure. He soon learns to call the physicians by name and recognizes each separately, but will say: "Doctor, you haven't been near me for an age." He will read the same item in the paper over and over with apparent interest, does not know that he is taking medicine three times a day, has a faint remembrance of having gone to the seashore and a good memory of what happened before the last six months in the West, for instance, the buildings of the World's Fair, *etc.* But the memory of venereal history is very deficient. He usually forgets that he is in Worcester; also the time: "it is only three weeks since I was in Chicago." During conversation he often begs the physician's pardon very politely and says: "Will you please call my attendant? I am obliged to answer the calls of nature," and in a few minutes he forgets the "urgent necessity." The patient has insight into his physical condition, says he keeps up courage and hopes that he is getting better from day to day.

Physically he is very well developed and nourished. There is no scar on the penis. The pupils react promptly, the left ear is deaf (otitis); taste and smell are normal. Tactile sensibility is normal, also localization. A zone of *tactile hyperesthesia* on the right from the upper border of the sixth rib to a parallel about 8 cm. below and on the left from the upper border of the fifth rib about the same width downward. Feeling of girdle

sensation "like pants buttoned tight at the level of the umbilicus."

There is *analgesia* below the sixth rib on the right, and the fifth on the left. Also *thermanesthesia*. At the fourth rib there is apparently a slightly *hyperesthetic temperature zone*. Everywhere below sensations are given as "equally warm," but over the fourth rib, the cold tube is called "red hot."

The elbow and wrist jerks are equally increased on both sides, also the knee-jerks; the knee-cap reflex marked on the left, absent on the right. No ankle-clonus, plantar reflexes obtained only on sharp stimulation or not at all. At other times even a slight prick of the legs produces an involuntary retraction of the legs. The cremasteric reflex prompt on the left, absent on the right. *Tickle sense preserved*. On the outside of both legs the skin is hairless. There are no obvious atrophies. The muscular power in the head, back and arms is good everywhere, but there is a rather coarse tremor of the hands at rest and on rotation; no twitchings in the face. Below the thorax there is total paralysis. The patient only can flatten slightly the protuberant abdomen by a pull at the upper insertion of the recti. With the utmost effort he can pull up the thigh slightly, and at times move the right toes a little. Twitchings consist in a sudden contraction of the muscles of the thigh, an upward and inward movement of the leg, flexion of the thigh on the abdomen but no contraction of the muscles of the feet or calf or of the abdomen. When the knee reaches an angle of 60° it falls to a lifeless abduction and the leg extends itself again. Then comes a "hot iron pain" shooting through the leg from the toes to the top of the pelvis.

The status remained the same throughout the summer. On December 5, 1898, an ingrowing toe-nail was removed without anesthetic. The rubber cord used felt "very tight but not painful." During the operation he asked a dozen times at intervals of one or two minutes, "Have you taken the nail off, Doctor?" and finally claimed he had never asked.

July 20, 1899, the patient was oriented concerning the "Worcester Lunatic Hospital," claimed it was June 1897, or 1898, he knew the name of Dr. G., but not of other physicians, and that of only one attendant, and none of the patients. He thought he left the West six weeks ago. Simple calculations were fair; a striking contrast existed between absolute clearness of intellect, and memory defect; practically no fabrications.

Nov. 8, 1899, at 9 A.M., when the patient was given an enema he suddenly complained of a queer sensation, sickness of the stomach, severe pain in the shoulders, he vomited, showed in a few minutes hardness of the abdominal walls, coarse per-

spiration and ashy appearance, a weak and rapid pulse. The pain, and later also the vomiting were stopped by a hyperdermic of morphine; within three hours the temperature began to rise, hiccough set in at 5 P.M.; the patient became comatose, the radial pulse was lost, Cheyne-Stokes respiration appeared, and at 5.30 he died.

The autopsy was made two hours *post mortem*. There was a perforation of the sigmoid flexure, 10 inches from the anus, about 4 cm. long, with everted deeply injected mucosa, escape of fecal matter and beginning peritonitic reaction. No evidence of ulceration.

The heart (370 grms) showed considerable fat; muscle and fat of the right ventricle being 12 mm. thick. The beginning of the aorta with considerable atheromatous patches. The lungs were retracted and normal.

The kidneys weighed 115 and 105 grms.; the right one had a small cyst and numerous whitish depressions. Spleen 160 grms. with soft pulp and marked trabeculae.

Liver, 1425 grms., with rather distinct lobules.

The head is injected with 10 per cent. formalin solution. The pia was found slightly edematous, considerably whitened over the frontal regions, the basilar arteries thin; cisterna clear.

The brain weighed 1,380 grms. The frontal lobes separated with slight tearing of the cortex. The spinal cord showed translucency of the pyramidal area from the lower thoracic region downward.

Microscopic examination:

There is a myelitic destruction in the fourth thoracic segment, involving the whole cross-section with the exception of the dorsal two-thirds of the posterior columns, and a few fibers of either pyramidal tract. The secondary degenerations are (See the figures of C₂, C₆, Th₄ and L₄):

(a) Below the lesion:

1. Most of the fibers of the crossed pyramidal tract.
2. The fibers of the direct pyramidal tract, soon disappearing among the antero-lateral ground-bundles, latest in the medio-ventral angle.
3. The short paths, for several segments in a figure resembling that of Gowers' field.

(b) Above the lesion:

1. The direct cerebellar tract and Gowers' tract are easily followed into the medulla oblongata, but lost from the auditory segment, even in the velum anterius.
2. In the posterior columns a Y-shaped field at the middle of the median septum (in the upper cervical segments).

The great difficulty of final anatomical, physiological and



L₄

Th. 4.

Sections from the second and eighth cervical, fourth thoracic and fourth lumbar segments, showing the extent of the lesion and the secondary degenerations.

psychological correlation in matters of the spinal cord, pointed out in my "Review of the Data of Modern Neurology"², cannot be relieved by cases of this kind, but they assure points for focal diagnosis of some value.

There is, however, a group of cases which Van Gehuchten has collected and discussed³ with reference to the isolated affection of pain and temperature sense in compression and traumatism of the spinal cord. Van Gehuchten properly distinguishes the cases of Bruns, Vines, Edsall and Marinesco and his own as dissociations covering the whole area below the point of lesion, from the cases of Minor, and Kahler and Pick, which are most likely to be attributed to a localized hematomyelia, and refer only to a small area above the lesion. There are further the cases of J. H. Lloyd⁴, which show a one-sided dissociation in the unilateral traumatic lesion of the cervical cord; and, further, a very interesting case by Henry Hun⁵ in which the unilateral dissociation was found after a lesion in the medulla oblongata; and a similar case of Wallenberg⁶.

All these cases are in favor of Van Gehuchten's view that the conduction of temperature and pain sensations depends on a path in the lateral columns, though probably only in the region of that of Gowers. They also show that Edinger's view of the existence of a decussating sensory path in the cord requires modification and at least restriction to pain and temperature sense. Beyond this, the question remains in suspense as long as the Brown-Séquard symptom-complex is not elucidated.

²Journ. of Comparative Neurology, Vol. viii., p. 299.

³"La dissociation syringomyelique de la sensibilité dans les compressions et les traumatismes de la moelle épinière et son explication physiologique," par A. Van Gehuchten. Extrait de la Semaine Médicale, 1899.

⁴Dr. J. H. Lloyd kindly drew my attention to his two publications: "A Study of the Lesions in a Case of Trauma of the Cervical Region of the Spinal Cord Simulating Syringomyelia" (Brain, 1898, p. 36 and 37), and "A Study of the Lesions in a Second Case of Trauma of the Cervical Region of the Spinal Cord, Simulating Syringomyelia. Jour. OF NERV. AND MENTAL DIS., Vol. xxvii, 1900, p. 65-73.

⁵"Analgesia, Thermic Anesthesia and Ataxia, resulting from Foci of Softening in the Medulla Oblongata and Cerebellum due to Occlusion of the Left Inferior Posterior Cerebellar Artery. A Study of the Course of the Sensory and Co-ordinating Tracts in the Medulla Oblongata." N. Y. Med. J., April 17, May 1 and 8, 1897.

⁶"Anatomischer Befund in einem als 'acute Bulbäraffection (Embolie der Art. cerebellar post. inf. sinister.?)' beschriebenen Falle." Arch. f. Psych. vol. 34, p. 923-959.

A CASE OF COMBINED SCLEROSIS OF THE SPINAL CORD.

By FREDERICK T. SIMPSON, M.D.,

VISITING PHYSICIAN TO THE HARTFORD HOSPITAL.

G.L.C., female, of native New England stock; age at death fifty-seven; married twenty-five years, but for fifteen years or more separated from husband on account of his intemperance; mother of two healthy children, twenty to twenty-three years old; no history of miscarriages; no history of syphilis obtainable. For fifteen years, or more, the mother had supported the children by sewing in certain well known families in Hartford among whom she was much esteemed on account of her skill, her industry and her vivacity.

About the age of fifty, she began to notice weakness in her feet and numbness, together with some unsteadiness in walking. These symptoms at first slight, slowly increased, and with them her general health deteriorated. She lost flesh and strength, and became nervous and irritable. She kept on working, however, in one way or another for three or four years. I saw her first in March, 1899, after the disease had been five years in progress.

Status praesens. A woman of rather below medium height, of slender build, dark complexion, of the nervous temperament. Marked pallor is noticeable, and general emaciation. Mind clear, and no marked loss of mental faculty, except control of feelings. Is impatient and irritable and gives way to grief or anger frequently. Sleep normal, sometimes headache and backache occur. Pupils react sluggishly—no myosis nor mydriasis. Grip alike on both sides 35, or about normal; considers her hands all right. No anesthesia nor paresthesia of upper limbs, slight tremor of fingers. Knee-jerks exaggerated, ankle-clonus present, marked ataxia and weakness of legs, but can walk alone. Complains of much numbness in feet and loss of control, but no impairment of perception of touch, pain, or temperature changes to be detected anywhere. Bowels badly constipated and a feeling of "no power" in them. Appetite very poor and digestion bad. No disease of heart, lungs, or kidneys to be detected. Blood examination made by Dr. P. D. Bunce showed normal relations of red and white cells to exist.

During the following six months her condition gradually grew worse, but she still walked with assistance and rode out. In September, she had a sudden attack of complete motor and sensory aphasia with deviation of tongue to right, and dilatation of right pupil. No paralysis of arm or leg. In two or

three days, could talk jargon and could understand and obey a very short spoken command, but not a written one. For two or three weeks she suffered with word deafness and paraphasia, and was given to outbursts of anger and grief manifested by shrieking and crying, and due evidently to the fact that she couldn't understand, or be understood. This condition steadily improved until she was able to speak and hear as well as before. She never had any delusions, hallucinations, expansive ideas, nor any form of melancholia. Her outbursts of anger and grief, and a certain impatience, restlessness and desire for change of conditions were manifestations such as might be expected in a spirited woman of nervous temperament undergoing such an experience. The condition of wasting and weakness

Section from upper thoracic cord showing greatest extent of lesions.¹

of legs went steadily on until she stopped walking and only moved from bed to chair or lounge. I lost sight of her now for nearly a year. In February, 1901, I was summoned again and found her bedridden, with complete paraplegia and paralysis of sphincters. An immense bedsore existed over the sacrum. Sensory disturbance of legs not marked. The arms were not affected. The mind was clear. Emaciation was extreme. Death from exhaustion occurred within two weeks.

Permission could be obtained to remove only the spinal cord, which was cut off in the cervical region, and sent to Dr. J. R. Hunt, of New York, whose report is substantially as follows:

"Cord received in formalin being severed at about the

¹Photographs by Dr. B. H. Buxton, New York.

seventh cervical segment. The cord throughout to the naked eye appeared very small.

"Findings, Nissl: Throughout, at all levels examined there were noted acute changes in the cells of the cord, particularly in the anterior horns, consisting of chromatolysis, occasionally perinuclear, sometimes peripheral, sometimes irregular shown by a dusty appearance of cell protoplasm in contrast to the sharply defined Nissl granules. A swelling and irregular contour of the nucleolus and an occasional peripheral or excentric position of the nucleus. The above considered to be acute, and produced by conditions occurring not long before death, as decubitus, cystitis, etc., and having no connection with the affection of the cord.

"In addition the cells of the anterior cornua contained ex-

Section from upper thoracic cord showing greatest extent of lesions.

cessive pigment (pigmentary degeneration) so common in advanced life, and chronic cord affections.

"Marchi sections are marked by almost entire absence of acute degeneration. Here and there in the degenerated areas, compound granule cells are found (intensely black) and a few degenerated nerve fibers.

"Weigert and Pal sections show very well the degeneration which corresponds to the so-called quasi-systemic form of Putnam and Taylor, and which is found in the crossed pyramidal tracts on both sides, much more marked in one than in the other, and in the posterior columns along the posterior median fissure.

"The degeneration in the posterior columns begins well above

the lumbar enlargement, thus explaining the exaggerated reflexes. Another histological peculiarity is the vacuolation of the degenerated areas. This is almost pathognomonic of this condition and remains to be explained, and is in marked contrast to tabes, lateral sclerosis, and other forms of systemic cord disease.

"The blood vessels show thickening especially in the gray matter in the ramifications of the anterior commissural arteries, but nowhere could we demonstrate signs of arterial occlusion (endarteritis obliterans).

"There is but slight tendency to neuroglia thickening in the degenerated areas. This is peculiar and tends to produce the above vacuoles. The degeneration of the posterior columns not only begins high up, but increases as we ascend the cord."

Dr. C. L. Dana, to whom I gave the history of the case, and who examined the specimens, wrote: "It seems to me it is a case of combined sclerosis of the chronic type—not of the type of subacute combined sclerosis, such as I have reported a good many cases of, and such as is usually associated with anemic and cachectic states. The clinical diagnosis of your case, I should judge, was one of chronic ataxic paraplegia. These cases in my experience all belong to either modifications of locomotor ataxia, forms of dorsal myelitis, of Friedreich's ataxia, or of general paresis with spinal complications. It is asserted there is another type, however, not belonging to any of these. I do not think the picture of it clinically has yet been made out, and your case, if it is not one of the group I have mentioned, may perhaps help to clear up this matter."

To the writer, the foregoing case appears to stand midway between the two groups of chronic and subacute combined sclerosis, having features of both, and therefore contributing support to the view which would include the former in the latter. Age and individual resistance appear to be powerful factors in modifying the course of the disease.

NEW YORK NEUROLOGICAL SOCIETY.

October 7, 1902.

The President, Dr. Joseph Collins, in the chair.

A Case of Centralized Scleroderma.—Dr. B. Sachs presented a lady, twenty-four years of age, whom he had first seen six years ago with ordinary hypochondriacal neurasthenia. When next seen, last year, she stated that during the past few years she had noticed that the upper and lower extremities had begun to be stiff and more or less painful on movement. She was not aware at the time that there was anything especially wrong with her face. At present the face shows a very marked form of scleroderma and she also has distinct sclerodactyly. Six months ago there was so much retraction of the upper lip as a consequence of the retraction of the skin, that the gums were constantly exposed. The hands showed tenseness and glossiness of the skin, attenuation and clubbing of the fingers, and an apparent subluxation of the middle finger at the metacarpo-phalangeal articulation. An X-ray photograph shows that the latter is due to the wearing away of the bone under abnormal pressure. There is also a general scleroderma in this patient extending from the forehead to the middle of the abdomen. The lower extremities are only sclerodermatous in certain areas. There are also some areas of leukoderma. The speaker said that this woman had shown a certain amount of improvement under thyroid medication. She had taken as much as 18 grains a day without detriment, and had also had warm baths and exercises with the object of improving the condition of the integument and underlying tissues.

Dr. George W. Jacoby said that he had been one of the first to act upon Dr. Sachs' suggestion regarding the use of the thyroid extract, and he was convinced that this treatment accomplished something. About a year ago he had himself reported two cases, in children, in which the skin had become almost perfectly pliable as a result of thyroid treatment. The changes in the fingers had been very much more marked than in the case now under discussion. Of course, these pathological conditions did not retrograde. He did not think the pressure of the retracting skin was sufficient to explain the marked bony changes observed. In his opinion, the thyroid treatment was the only one that held out any prospect of success, and it was particularly useful in children.

Dr. Joseph Fraenkel said he believed there were two types of scleroderma, the localized and the generalized. The latter appeared to him to be an expression of a rheumatic tendency. For the last four months he had had a case under observation which had done very well under anti-rheumatic medication, particularly the use of the salicylates. Ordinarily the thyroid treatment seemed to be the best method.

Dr. Joseph Collins said that he had had some experience with the thyroid treatment, and while he had observed improvement the results were not at all comparable with those reported by Dr. Sachs and Dr. Jacoby. All that he thought the thyroid did was to diminish the subcutaneous fat. This, of course, made the skin much more pliable over the affected area, and reduced the mask-like appearance of the face. In his opinion scleroderma was a disease of the spinal cord and of the sympathetic fibers and cells within the spinal cord. The symmetry, chronicity, course and termination were all explicable on this theory.

He hoped soon to have an opportunity of making a post-mortem examination upon a marked and advanced case of general scleroderma. In that patient sensory changes were occurring which pointed strongly to involvement of the conducting pathways of the spinal cord. As young persons have a marked accumulation of subcutaneous fat, and this fat could be very readily increased or diminished, it was easy to explain the good results just reported by Dr. Jacoby.

Dr. Sachs said that in the patient he had just presented there had been an extremely disagreeable appearance of the face a few months ago resulting from the attenuated state of the nose, a part having very little subcutaneous fat; yet this part had very decidedly improved under the thyroid medication. He would be greatly surprised if scleroderma proved to be an affection of either the spinal cord or of the sympathetic system. The disease seemed to be diametrically opposite to two other diseases—acromegaly and myxedema. He was inclined to think that scleroderma was possibly a general glandular affection involving not only the skin but the subcutaneous tissues, and even the bones.

Myotonia or Hysteria.—Dr. Edward D. Fisher presented a young man who had first come to his clinic about one week ago. The man was twenty-one years of age, an electrician by occupation. He was apparently well up to the time of enlistment in the Spanish-American war. Over one year ago the left foot began to twitch on attempting to walk. In February, 1902, the right leg became involved, and later the muscles higher up, even in the back. At present all of the muscles below the ribs become more or less contracted on attention. There is no loss of sexual power or loss of sensation. The electrical reactions are normal. On standing up there is a twisting of the body and spasm of the feet. The process had lately extended upward, so that there was now a mild affection of the muscles of the hands and arms. The diagnosis seemed to rest between myotonia and some functional disorder.

Dr. B. Sachs said he had had an opportunity of examining this man about two weeks ago, and had been impressed with the possibility of its being a hysterical condition. He had examined the muscles electrically, and had found them abnormal. There were distinct evidences of a myotonic reaction, a long-continued wave which started in one part of the muscles and spread up slowly between the electrodes. Moreover, with the object of excluding hysteria he had at first applied a current which was very mild, not letting the patient know that he was doing so. As the current was gradually increased up to the point which should produce a muscular contraction, this wave-like contraction was observed.

Dr. J. Fraenkel remarked that he had seen this patient at the clinic, and that Dr. J. Ramsey Hunt had been unable to obtain the myotonic reaction.

Dr. George W. Jacoby said that these cases emphasized the difficulty of making the differential diagnosis between myotonia and hysteria. He had presented a case of myotonia acquisita to the American Neurological Association. All of the myotonic symptoms were present, and there were the electrical and mechanical reactions characteristic of myotonia. A microscopical examination, however, yielded results that were difficult to reconcile with this diagnosis. Dr. Jacoby said he made a bad prognosis, and had subsequently learned that the man after winning a law suit against a railroad company became perfectly well.

Dr. Collins thought if the diagnosis of hysteria major was to be made there should be present more stigmata than merely myotonia.

Dr. E. D. Fisher said that the general aspect of the patient had led to the suspicion of a neurosis, but after careful examination the

diagnosis of myotonia had been made. The electrical examination had been made last June, and at that time no electrical changes were observed. The man's appearance was certainly that of a neurotic individual.

Radiographs of a Tumor of the Brain.—Dr. George W. Jacoby presented some X-ray pictures from a recent interesting case. He said that he had been taking these pictures in such cases for a number of years, but until now the results had been very disappointing. The diagnosis in the present case was a tumor of the brain in the mid-Rolandic region, and the patient had been operated upon about two hours previously. The tumor had been found in the position diagnosed and corresponding to that indicated by the radiograph.

A Case of Brain Tumor (?)—Dr. William M. Leszynsky presented a man, thirty-one years of age, first seen a few weeks ago. Ten years ago he began to have attacks of headache followed by vomiting. At first, there was only one attack each month, but more recently they had recurred about once a week. Six months ago the headache became more intense, and was associated with vomiting and vertigo, and he was in bed for three weeks. On getting up he had diplopia, and three months ago he became blind, and since then had been unable to walk. There was now moderate general headache and vertigo. There was no history or evidence of syphilis, and no history of alcoholism or of infectious disease. Examination showed no tenderness on percussion over the skull. There was some rigidity of the muscles of the back of the neck; both pupils were dilated and immovable, not reacting to light or to convergence. Reflex winking was absent on the left, but well marked on the other side. There was paralysis of both right and left abducens nerves, paresis of both internal recti and an inability to converge. Vision was completely absent in both eyes and there was marked neuro-retinitis on both sides, but no choked disk. There was partial paralysis of the seventh nerve and of the orbicularis palpebrarum. There was an actual deviation of the tongue to the left. The grasp was good on both sides. There was no paralysis of the lower extremities, yet he was absolutely unable to stand. There was no apparent weakness of the trunk muscles. The case was presented for diagnosis. The question arose as to whether there were a tumor of the cerebellum originating in the vermis, or one that had extended to this part from the corpora quadrigemina. If the pyramidal tract were not affected it was possible that there might be a secondary meningitis.

Dr. B. Onuf suggested that there might be a tumor of the pons.

A Case of Tabes with marked Bulbar Symptoms.—Dr. I. Abrahamson presented a man of forty-four years, seen at the clinic in the latter part of September. There was a history of marked alcoholism. The present illness dated back to last spring, when diplopia developed, quickly followed by ptosis and lachrymation. The man had lost thirty pounds since that time, and difficulty in mastication and in urination had developed, along with hoarseness and various paresthesias of the throat. The temporal arteries were tortuous, the patient was badly nourished and presented evidence of degeneracy. The Romberg symptom was present, and the motions of the eyes were restricted. There was marked wasting of both temporal and masseter muscles, with greatly diminished reaction to both electrical currents. The optic nerve showed beginning white atrophy. The knee-jerks and Achilles reflex were absent on both sides, while the bulbar reflexes were lively. Tactile sensibility was nearly normal. The chief feature of the case was the extensive cerebral and

nuclear involvement. The case was evidently one of tabes with very marked bulbar symptoms.

Differential Diagnosis of Multiple Sclerosis.—Dr. B. Onuf presented a paper on this subject. He quoted from the literature to show that it was probable that this term, multiple sclerosis, referred to a symptom-complex representing most varied pathological processes. The diseases most apt to be confounded with it were diffuse sclerosis, pseudo-sclerosis, cerebro-spinal syphilis, general progressive paresis and a number of other diseases, such as tabes, ataxic paraplegia and transverse myelitis. Diffuse and pseudo-sclerosis had a symptomatology so similar that he did not feel the differential diagnosis could be clearly made. The multiplicity of the lesions of cerebro-spinal syphilis and the recurrence of the symptoms after intervals of comparative freedom from them bore a close resemblance to multiple sclerosis. It was evident, therefore, that the diagnosis must be founded on a complete clinical picture rather than on one or two individual symptoms. The value of antisyphilitic treatment was great as a diagnostic aid, but the results were not wholly reliable, particularly when marked improvement was not noted within a period of about two weeks. Spasticity was just as frequently observed in syphilis, and the intentional tremor he had seen very typically developed in a case of undoubted cerebral syphilis. Fairly developed nystagmus pointed very strongly to cerebral syphilis as against disseminated sclerosis. Scanning speech was a strong symptom in favor of disseminated sclerosis as against syphilis. There were two symptoms which he considered of great importance: (1) the facial expression, and (2) an emotional state associated often with marked euphoria. These two symptoms were relatively rare in syphilis. Optic neuritis was present in a large percentage of cases of multiple sclerosis, and was often the only symptom in the early stages; however, optic neuritis was very common in cerebral syphilis, though it was more apt to be attended by retinal hemorrhages. The fact that multiple sclerosis was often ushered in by some acute disease was a point of some diagnostic importance. The speech disturbance in general progressive paresis was often quite marked, indeed this affection should not often be confounded with multiple sclerosis. The number of spinal diseases that might be simulated by multiple sclerosis was very great. In doubtful cases the presence, besides the spinal manifestations, of symptoms pointing to multiple cerebral involvement would speak in favor of disseminated sclerosis, as would also the symmetry and regular distribution of the spinal symptoms. The speech of bulbar palsy might be very much like that of multiple sclerosis, and the patient might also be distinctly emotional.

Dr. Fisher thought multiple sclerosis was most likely to be confounded with cerebral syphilis and general paresis, and yet it was only at certain stages that even here any difficulty existed. The tendency to stupor and attacks of prolonged sleep, and the ocular palsies were characteristic and were not observed in insular disease. In general paresis the flattening of the face, the tremor and the articulation were quite similar, but the mental state was quite different. At times multiple sclerosis might be confounded with hysteria. The disease being very slow in its progress years might elapse before the true diagnosis of insular sclerosis could be made. It should be borne in mind that insular sclerosis sometimes occurred in young people, at the age of sixteen or eighteen years, a point of differentiation from cerebral syphilis.

Dr. Onuf agreed with Dr. Fisher that the tendency to somnolence was ordinarily a strong symptom in favor of syphilis, and admitted that it was sometimes difficult to distinguish the disease from hysteria.

Arterial Disease in Comparatively Early Life.—Dr. E. D. Fisher read a paper with this title. He said that if one had not established himself in some definite line of work by the age of forty, he would rarely succeed. This was the law of life. Having excluded syphilis, kidney disease, diabetes, alcoholism and old age there would still be a number of cases of arterial disease having a different etiology. He was of the opinion that cerebral hemiplegia was more than ordinarily common at the present period of our national development. There was an intensity in the pursuit of an object in the Anglo-Saxon race not present in the Latin races; this led us to a very large consumption of tissue. He believed that the so-called "strenuous life" led to a fatty degeneration of the cardiac and arterial muscular tissue. If this view were correct, then the means of prevention were obvious and important. Our social system in the large cities was one of anxiety and overwork. There should be less straining after living, as is the case with the very rich, and a stronger desire for culture and moderation.

Dr. W. B. Noyes raised the question as to whether, in the treatment of so many diseases of the nervous system with strychnine physicians were not committing a grave error. The effect of this drug on the arteries was not closely studied, and it had occurred to him that in cases like those described in the paper, in which there was, in his opinion, arterial disease, the persistent use of a drug like strychnine, which increases the arterial pressure, was actually harmful and more than counterbalanced the beneficial action of the remedy upon the peripheral nerves. He believed that many of those present could bear him out in the statement that iodide of potassium frequently benefited many cases in which there was no syphilitic taint, probably by its effect on the vascular system. He would like to hear from others regarding this view that strychnine and iodide of potassium are, to a certain extent, antagonistic in their action on the vessels.

Dr. Leszynsky said he could not agree with Dr. Fisher in the contention that the so-called strenuous life produces cerebral and arterial degeneration unless this were accompanied by alcoholism, syphilis or some other toxic cause. He had never seen a patient under forty years of age with a cerebral hemorrhage or endarteritis unless there were some discoverable cause which would lead one to the belief that such conditions had previously existed.

Dr. Sachs said it was interesting to consider whether there were really arterial disease in early life sufficient to lead to apoplectic attacks. Personally, he could not recall a single case of cerebral hemiplegia which was not due to arteriosclerosis, syphilis or embolism, or was the accompaniment of renal disease. There was only one other vascular degeneration occurring early in life, i.e., a fatty degeneration of the artery, and which explained the very early apoplectic attacks in children. When he had been able to exclude embolism, renal disease and syphilis he had always come to the conclusion that the case was one of early arteriosclerosis.

Dr. Joseph Collins said that he found it very difficult to talk upon arterial disease—not sclerosis. He was thoroughly convinced that chronic degeneration of the tunica medica, arteriosclerosis, was a disease of the strenuous life, and that alcoholism, rheumatism, syphilis and the so-called metabolic diseases had very little to do with this. A deficient heredity was one of the contributing causes. Another was chronic indigestion of any kind, and a third was worry with work. These were more potent causes of arterial degeneration than syphilis, alcoholism and bad habits. The last named conditions caused periarteritis and endar-

teritis. A second great class of cases was dependent upon infections; some would put these as the first and more important class. We had been taught as students that arteriosclerosis was a disease occurring in those past fifty, but he maintained that this was not true, and that when the disease began at that time it was nothing more than a natural process at that age. A person of sixty-five or seventy years of age becoming ill with an infection like pneumonia usually had the disease in an exceedingly mild form. He would further contend that arteriosclerosis was, at the present day, the scourge of humanity, and that there was no organic disease of the nervous system that could compare with it in its effect upon the production of disease.

Dr. Leszynsky thought the last speaker had begged the question with regard to young subjects. If the strenuous life reacted upon digestion and interfered with assimilation it caused an intoxication or an infection, and in this way set up an arteriosclerosis. He did not think any proof could be adduced to show that the strenuous life alone produced arteriosclerosis.

Dr. Fisher, in closing, said that a man over forty years of age would rarely start out in a new line of work, although he might continue to do much very good work in old channels up to quite late in life. If he had understood the remarks of Dr. Collins, he did not think their opinions were very much at variance on this topic. By arterial disease he meant any morbid condition of any part of the arteries.

CHICAGO NEUROLOGICAL SOCIETY.

Joint Meeting with the Chicago Medical Society.

April 2, 1902.

The President, Dr. Daniel R. Brower, in the chair.

Definition and Pathology of Neuritis.—Dr. Archibald Church spoke on this phase of the subject. He said that some fifteen years ago nothing was heard of neuritis. There was even a general feeling that the nerves were to some extent immune against the processes of inflammation. Ten years ago a definition of the term neuritis would have been of the greatest ease; if one had said that it meant inflammation of the nerve, he would have covered the ground. This condition, at first apparently simple, had been found to be complex, and now the term neuritis was a generic one. It had to some extent been stretched out of its proper significance.

He divided cases of neuritis into the true form, marked by inflammation in the nerve or its fibrous support, and those forms of neuritis characterized by degenerative processes. True neuritis, the first variety, was generally confined to a single or to several nerves, but it did not, as a rule, involve a great number of nerves. It was inflammatory, and usually arose from the surrounding tissues involving the nerve by extension, by continuity or contiguity.

It may be secondary to a new growth. Any variety of neoplasm in the neighborhood of the nerve may by infiltration set up irritation and terminate in actual inflammation of the nerve. In some instances the nerve was invaded by the tubercle bacillus; in others by the germ of leprosy. Syphilis involved the nerves much more frequently than was supposed. Sometimes when sciatica does not yield to ordinary methods of treatment, a course of mercury is proper. In leucocythemia and a number of other disorders of the blood characterized by dyscrasia and disintegration of blood elements, portions of the peripheral nerve were inflamed, presenting a true neuritis.

Attention was directed at considerable length to the degenerative form of neuritis. The speaker said it was more common than the inflammatory variety. The degenerative forms of neuritis were generally the result of toxic causes or elements, the principal ones of which were lead and alcohol. Various forms of cachexia, especially syphilis, were attended by manifestations of degeneration in the motor portions of the peripheral apparatus.

The character of the degeneration in multiple neuritis was practically a Wallerian degeneration. Multiple neuritis must be looked upon as the result of systemic poisoning, and as a systemic disorder involving all portions of the nervous apparatus. The chief toxic substances which give rise to multiple neuritis were alcohol, lead, arsenic. Reference was made to the occurrence of the epidemic in Manchester, England, in connection with beer-drinking.

Owing to the idiosyncrasy of a patient, mercury given in the usual manner had been known to set up all the symptoms of multiple neuritis, the neuritis subsiding upon the withdrawing of the mercury. Other agents were mentioned as toxic substances capable of setting up multiple neuritis, among them phosphorus, sulphur, etc.

Among the autotoxic causes of multiple neuritis, he spoke of diabetes. In chronic interstitial nephritis, owing to a toxic condition, there

was disturbance of the nervous apparatus, showing itself in vague, yet when carefully considered, highly suggestive sensory manifestations of disturbance of the nervous apparatus. Another group of autotoxic factors arose from intestinal conditions. Individuals subject to dysenteries, parasites, and chronic intestinal disorder, might develop multiple neuritis. All of the infections practically were capable of inducing multiple neuritis through their toxic action.

In pernicious anemia one might have all the symptoms of neuritis which were attended in the majority of cases by histological changes in the spinal cord.

In old age, in patients in whom there was extreme arteriosclerosis, there were often manifestations of multiple neuritis, the disease arising from a number of causes. For instance, the artery which supplied the nerve, owing to an atheromatous condition and a sclerotic state, did not deliver enough nutrient material to the nerve, so that nutrition was disturbed locally.

Symptomatology, Diagnosis and Differential Diagnosis of Neuritis.

—This was discussed by Dr. Sydney Kuh. He called attention to the fact that in toxic neuritis—and possibly in other forms—changes are found not only in the peripheral nerves but in the cells of the central nervous system as well, and that a large number of nerve fibers may be found degenerated in cases in which *intra vitam* no signs of disease in them could be detected. The disturbances of sensibility—both subjective and objective—were first described, then those of the higher senses, those of motility, of electric irritability, of coördination, of reflexes, of trophic, secretory and vasomotor functions, etc. Korsakow's psychosis as a symptom of multiple neuritis was discussed in detail and the constitutional symptoms accompanying neuritis briefly mentioned.

In speaking of the diagnosis of neuritis rules were given for its differentiation from rheumatism, disease of bones and the periosteum, hysteria, neuralgia, cerebral disease—especially that involving the facial and oculomotor nerves,—acute and chronic poliomyelitis, locomotor ataxia, muscular dystrophy and polymyositis.

Treatment of Neuritis, Other Than Surgical.—Dr. Elbert Wing said that in the treatment of neuritis it is of first importance to make a correct diagnosis; to determine that the case is one of neuritis, and whether simple, multiple, toxic, acute or chronic. The objects of treatment are removal of the cause, and restoration to normal conditions. When due to pressure, instrumental or from foreign growths, removal of the cause is often a simple matter, but may be difficult. A similar statement applies to cases due to, and complicated by, gouty or rheumatic states. In these cases disappointment is not apt to follow correct diagnosis and efficient methods of treatment. In cases due to mineral poisons the detection of the source of the offending element may at times be difficult, and in alcoholic cases clever deception on the part of the patient may increase the difficulty. In cases which are really those of the parenchyma—true degeneration, the pathologic conditions of course continue long after the specific cause is removed.

Relief of pain is imperative in all acute cases of severity. For this purpose hot cloths properly applied along the course of the nerve often are of great effectiveness. Counter irritation may answer, but should never be applied in the area of distribution of the affected nerve. In chronic cases the actual cautery is the best counter irritant. In acute simple cases Gowers' liniment is of great value. Sand bags, slings and splints have a useful function. They may promote relief of pain through limitation of motion, and prevent and correct deformities. In

most severe primary cases morphine is needed for the relief of pain. The coal-tar preparations rarely suffice. If used, the doses must be large, frequently repeated, and acetanilid should never be used for this purpose. Morphine, cocaine and other analgesics are most effective when placed, by means of a hypodermic syringe, in the immediate proximity of the affected nerve.

Stretching of the nerve, in simple sciatic cases, by forcible flexion of the trunk upon the extended lower extremities, or of the extended extremity upon the trunk, the body supine, is at times remarkably successful both in relieving pain and promoting recovery. The same is true of efficient massage. The use of electrostatic currents and the Roentgen rays have a useful future in the relief of pain in probably all cases of neuritis. Unfortunately they are not often available for treatment of these cases. In some cases the galvanic current has decided pain relieving power, in others its use increases pain. A safe rule is never to use a current strength which causes a decided increase of pain at the time of its use, or any persistent increase.

The rare forms of neuritis due to syphilis are treated along the general lines of the two diseases and need no elaboration in this connection.

The various forms of multiple neuritis differ radically in their causes, but are so essentially similar in their pathologic conditions in many respects that their treatment is much along the same lines. These lines are removal of cause, prevention of contractures, protection of tender extremities, at times relief of pain, and finally the general tonic treatment of any severe chronic disease in which the essential lesions are degenerative. In this list general tonics take high rank and the salts of strychnia the first. As in any other chronic condition, the form of tonic used must be occasionally varied. In the chronic forms of simple neuritis the use of one grain of blue pill, two or three times daily, and for long periods, produces favorable results. In polyneuritic cases, massage, skilfully used, the proper use of splints and electricity, together with voluntary exercise of muscles, bring about cures even in the worst cases.

Two classes of multiple neuritis require special mention. As a rule, in alcoholic neuritis, alcohol may be withdrawn at once. In the variety of neuritis due to lead, the conventional attempts at specific removal of the mineral are at first demanded.

The causes of death in the fatal cases indicate clearly the special care which is needed, cardiac and pulmonary weakness being induced both directly by the special cause in each case and by the auto-intoxication which may arise in any case. These principles of treatment must be constantly in mind in every case of multiple neuritis. They are usually simple and well understood, but must be the objects of constant watchfulness.

Surgical Treatment of Neuritis.—Dr. Weller Van Hook discussed this phase of the subject, saying that surgery is in a position to be of service in the treatment of the consequences of neuritis rather than in the management of the actual disease itself, whether acute or chronic. In the acute form of the disease, aside from those instances in which a suppurative lesion is present, very little can be done by surgical means for the relief of the patient, except to afford some aid by rest. Where pressure upon a nerve is superinducing neuritis, or neuralgia, the case belongs within the province of surgery. Where fractures primarily or secondarily involve large nerve trunks, operative procedures are frequently needed; for example, where a fractured clavicle

presses upon the brachial plexus, relief by elevating the fragments and separating the connective tissue from the nerve is of absolute necessity. Not infrequently the long bones, when fractured, similarly press upon important nerve trunks.

In open injuries, where infection is likely to occur, the utmost care must be taken by the surgeon to prevent infection of the wound, particularly where large nerve trunks are likely to be involved. There may be not only inflammation of connective tissue around the nerve involving the nerve trunk in adhesion, but it is also possible to have from such a wound a migrating neuritis successively involving different nerves. This form of neuritis is supported as a nosological entity by Krehl, who maintains that well-marked cases of the disease have frequently come under his observation.

In the chronic forms of neuritis surgery is of more frequent avail. It is in the treatment of the consequences of peripheral neuritis that surgery finds the greatest scope. In compression of nerve trunks by periostitis, it is admissible to remove the connective tissue around the nerve, as has been frequently done, an operation which is termed neurelysis.

Tumors of a non-malignant character that press upon large nerve trunks, producing more or less of an inflammatory condition, should be attacked by excision, while those which are of malignant character demand removal of the nerve or of a part of the nerve itself.

The method which one should pursue in the treatment of hemorrhages within and about nerve trunks is yet open to difference of opinion. No definite rules have been laid down for the management of cases of this kind.

In the case of chronic inflammation producing neuralgia, a variety of surgical procedures are at the disposal of the surgeon. The stretching of chronically inflamed nerves is no longer practised so freely as was formerly the case; nevertheless, in cases of true neuralgia of the sciatic nerve, Hoffa recommends in selected cases the stretching of the nerve, at first by the subcutaneous method, and later, if necessary, by an open procedure.

The method of extraction of the nerve, exeresis, at first practised by Thiersch, is still in very common use. Undoubtedly, the majority of cases of neuralgia of the trigeminus can be cured by exeresis, and it is by no means necessary that the Gasserian ganglion should be excised in ordinary cases of this disease. On the contrary, this formidable and dangerous operation should be reserved for those cases in which peripheral operations have been thoroughly tried.

When paralysis is a consequence of neuritis, surgery offers relief in many cases by transplantation of nerves or of tendons. Results obtained by this modern method of treatment are very gratifying.

The French school of surgeons, at the head of which is Chipault, have of late shown much enthusiasm in the management of many cases of peripheral nerve disease, particularly of the trophic varieties, by stretching. It is claimed by Chipault that *mal perforant* of the foot can be favorably influenced in many instances by the stretching of the nerves of the leg.

It is particularly in cases where the sciatic has been injured, or where it has been involved in inflammations of the thigh, that nerve stretching has seemed to be of service in *mal perforant*.

Sciatica was discussed by Dr. L. Harrison Mettler. *Sciatica* in some recent textbooks is still classified under several heads, as for instance primary and secondary. The primary is divided into the idiopathic and

the special forms of neuritis. He thought this was a mistake. He could not conceive of a secondary sciatica in the sense of a mere pain of the nerve caused by some extraneural pressure. If there is disease of the bone, tumor, or other condition causing secondary disease, either of an inflammatory or degenerative type, in the sciatic nerve, it might seem to be a secondary sciatica, but it is only secondary etiologically. It is really a sciatic neuritis; hence he thought so-called secondary neuralgia, or sciatica, as a special class should be dropped from the books. Almost all the cases he had seen of sciatica exhibited more or less the symptoms of sciatic neuritis. The symptoms which usually accompany so-called ordinary idiopathic neuralgia of the sciatic nerve were those that are characteristic of sciatic neuritis. These were mentioned.

As to the treatment in cases of sciatic neuritis, where there was a rheumatic diathesis, he obtained the most favorable results from the use of the salicylates, pushing them until he got a decided physiological effect. He had not seen such favorable results from the use of mercury or anti-syphilitic treatment. Sciatica was not usually caused by syphilis.

Neuritis of the Fifth Nerve.—Dr. Daniel R. Brower detailed the report of a case of this form of neuritis. In taking the patient's history he inquired very carefully into his antecedents, particularly as to syphilis. The patient at first denied syphilis. In early life the patient had had two or three attacks of rheumatism. He was quite anemic. Dr. Brower did not know just how to begin treatment of the case, but first treated him on the anemic theory, and tried to build him up by the administration of appropriate hematinics; at the same time using galvanism. Under this treatment the patient grew worse. He was then treated on the rheumatic line, salicylates and iodides being given. The patient did not improve under this treatment, but became worse. Finally, believing that the patient was mistaken as regards syphilis, he gave him the mixed treatment for syphilis, and the pain disappeared as if by magic. Again he asked the patient in regard to syphilis as the probable etiological factor, and he admitted it.

He had had within three months two cases of neuralgia or neuritis of the fifth nerve, both syphilitic. It was rare in his experience for this nerve to be attacked by the syphilitic poison, but these cases coming so close together were interesting as well as instructive.

Dr. C. P. Pruyn said that dentists had a good deal to do with neuralgia of the fifth nerve. He was a little surprised on being told by a prominent neurologist that neuralgia of the fifth nerve was seldom caused by tooth irritation. Frequently the patients consulted dentists for relief after they had gone through the gamut of the general treatment by physicians, and tooth irritation was found to be the cause. Often there was calcification of the tooth pulp, sometimes complete, at other times simply a calcified nodule, which caused the whole disturbance. The removal of this nodule effected a cure.

Dr. O. B. Will, of Peoria, believed that in the acute or primary form of neuritis, where the patient was suffering much from neuralgia, the best treatment was the administration of chloroform or ether. He used this altogether in his own case, and his professional friends had adopted it, with good results. The chloroform should be administered *per os*, hypodermically, or by frequent inhalations. He thought there was no agent that would do as much in bringing about permanent relief in the class of cases under discussion as this agent. It should not be administered, however, to the point of anesthesia, but the system should be more or less saturated until pain was relieved.

Dr. A. W. Baer had used the salicylates in the rheumatic form of

neuritis, with beneficial results, especially if not pushed to the point of interfering with the functions of the stomach. He had never obtained much benefit or relief in these cases from external application, outside of heat and cold, except from the effects of rubbing oil on the parts affected. If the neuritis were of traumatic origin, the interrupted galvanic current was by all odds the best, and he had obtained some excellent results from it. Sparks from the static current in cases of toxic neuritis had given excellent results.

Dr. Julius Grinker thought motor disturbances were often the most prominent symptoms in cases of neuritis. Diphtheritic paralysis was nothing but a neuritis following diphtheria infection, manifesting itself by motor disturbances principally, the sensory disturbances taking a back ground, or perhaps not being noticed. Faucial paralysis follows diphtheria. He had seen a staggering gait develop in children after diphtheria. This was nothing but a symptom of multiple neuritis. It is well to recognize these forms of neuritis, because by so doing a life could occasionally be saved. Physicians hear of sudden deaths of children after diphtheria. A child is said to get well, walks about, but cannot swallow readily; fluids are regurgitated, and the child suddenly dies. Heart failure is said to be the cause of death. He thought possibly many of these cases were due to vagus involvement, the neuritis having developed and progressed rapidly and involved the vagus, killing the child, the nature of the trouble being unnoticed by the physician. Symptoms should be looked for in cases of diphtheria even after recovery has occurred. He urged that the reflexes be tested, as the first symptom noted after diphtheria of oncoming neuritis was absence of reflexes. When the reflexes are diminished or absent, one should look out for neuritis. It might develop rapidly and kill the patient.

Not long ago he was called to see a case in private practice. A child commenced to stagger two weeks after diphtheria. The mother noticed that the child's eyes seemed to be in the same position; in directing the child's attention to anything, it would stare in front of it and not move a muscle. He was called and recognized paralysis of almost all the ocular muscles, also paralysis of the lower extremities. He considered it a neuritis following diphtheria. He gave the child strychnia in large doses, and it is well today. He does not believe in giving the usual textbook doses of 1-120 of a grain, but the 1-30 of a grain, three times a day.

Dr. G. W. Hall said he had had the privilege in the last few months of seeing at the County Hospital two extreme cases of peripheral neuritis involving all the limbs of the body. The first patient, when admitted to the hospital, was unable to move either a hand or foot, and had no sensory disturbances. In the other case both arms and lower limbs were involved completely, with facial paralysis on one side, finally extending to the other side, with complete motor paralysis of all the limbs. There were no sensory disturbances. It was important to remember in making a diagnosis that sensory disturbances are not necessarily present. He believed that next to alcoholism sensory disturbances were more frequently present in peripheral neuritis than in any other form. He emphasized the great difference as to the presence and absence of sensory disturbances in the different forms of neuritis, saying that in neuritis following lead poisoning the sensory disturbances were very slight as compared with the motor. In neuritis following alcoholism it was very rare that we did not have sensory disturbances present to a greater or less extent. He believed in many cases paralysis comes on almost simultaneously with sensory disturbances.

Dr. Liston H. Montgomery would not care to use such large doses of strychnia as mentioned by Dr. Grinker. A formula which he had used with beneficial results is one composed of menthol crystals, dilute phosphoric acid, and a few drops of tincture of aconite with alcohol.

He thought it was an oversight that no one had mentioned rheumatism as a possible etiological factor of single or multiple neuritis.

Diet was a very important feature in the treatment of many cases of neuritis. Recently he had a patient who had suffered from multiple neuritis which had defied every form of treatment for eight years. One of the first questions he asked was whether any of the former physicians had ever prescribed a diet for the patient, and the patient replied that he was allowed to eat anything he desired. The speaker eliminated a number of articles from the diet, and along with the preparation mentioned he gave iodide of potassium in twelve grain doses, three or four times a day, and under this treatment the patient recovered.

Dr. Grinker did not consider the thirtieth of a grain of strychnia, administered to a child of eight or twelve years of age, a large dose. He had used it in such doses in several cases with excellent results.

Dr. I. A. Abt believed that strychnia is frequently given to children in too large doses. Not long since he saw a child at a hospital suffering from extreme rigidity and from opisthotonos. The symptoms made him think of tetanus, possibly a meningitis. He looked at the history sheet and found that the child, an infant not more than a year old, was getting nearly the twentieth of a grain of strychnia in twenty-four hours, and was suffering from strychnine poisoning. During the infantile period he believed great caution should be exercised in the administration of this drug.

Dr. James W. Walker mentioned the use of the Paquelin cautery in the treatment of neuritis, saying that he had obtained excellent results in the relief of pain. He could say nothing regarding its effect upon the inflammatory process in acute neuritis. It seemed formidable to the average practitioner to see it used. The lightest possible touch was all that was necessary. It could be used once daily, or once every other day, two or three strokes being made in the vicinity of the pain, affected joint or nerve.

Dr. Thomas L. Gilmer said he had been a sufferer from neuritis, especially of the sciatic form. A short time ago Dr. McArthur gave him a prescription for local application which did him more good than any one thing he had used for a number of years. This prescription was: menthol, 8 grams; oil of gaultheria, 30 grams, and creasote, 2 grams.

Dr. Kuh, in closing the discussion, agreed with Dr. Montgomery that rheumatism and a number of other causes might produce neuritis, Bright's disease amongst others.

With reference to the remarks of Dr. Grinker, he said that if his (Grinker's) patient had paresis of the lower extremities, associated with total paralysis of the movements of the eyeballs, the patient probably did not suffer from a diphtheritic neuritis. Total paralysis of all the extrinsic muscles of the eyeballs could hardly occur in neuritis.

Periscope.

Rivista mensile di psichiatria forense, antropologia criminale e scienze affini.

(Vol. V, 1902, No. 1, January.)

1. Tattooing of Neapolitan Criminals. A. DEBLASIO.
2. Restricted Responsibility. P. PENTA.

1. *Tattooing of Criminals.*—A highly suggestive sketch touching upon tattooing as expressive of the psychology of the criminal; shedding, *en passant*, some interesting light on the well known Camorra, an organized body of Italian criminals. The four individuals who constitute the subject of the study are brought forward as a proof of the author's contention that in many cases tattooing tells the story of the individual, certainly to those who are able to decipher it. Moreover, tattooing very often presents in figures and letters the criminal's aims and intentions as to the future, and may thus assist the authorities in preventing him from carrying the latter into effect. This refers especially to tattooing expressing revenge (*vendetta*).

2. *Diminished Responsibility.*—According to a great number of prominent alienists, among them Schrenck-Notzing, diminished responsibility is to be charged in cases of even slight mental affections, in incipient stages of others (as that of general paralysis), in simple psychic degeneration without delirium, in cases on the border line of insanity, those of sexual perversion, chronic alcoholism, neurasthenia, general epilepsy, etc. According to Mercier there is a certain sphere of activity in which every insane individual is to be held irresponsible, but outside of which any act of his may be punishable by law; so that but a few insane can be held entirely irresponsible. The author inclines to the idea that the physician should not be permitted as such to decide on the degree of responsibility in these cases, but should simply and clearly describe the patient's mental state, leaving to the judge the application of the law.

(Vol. V, 1902, No. 2, February.)

1. Examination of Four Crania of Insane Criminals. G. ANTONIUS and M. FALCIOLA.
2. Asylums for Criminals and Departments for Insane in Penitentiaries. P. PENTA.

1. *Examination of Four Crania.*—This is a minute and accurate examination of four crania from a collection of skulls of insane in the Voghesa Museum, whereby the author intends to prove not only the existence of degenerative stigmata morphologically, but that of a real anthropological type in a homogeneous group of criminals. The latter all committed homicide, and their skulls present such a remarkable similarity that they can easily be mistaken one for another. The author adds the results of this examination to the numerous proofs of the fact that Lombroso's theory as regards the criminal rests on a solid anatomical basis.

2. *Asylums for the Insane.*—The unprecedented crowding of the asylums for the insane of late years is ascribed by the author chiefly to two facts: the terrible increase of insanity as proven statistically, and the better as well as the more diffuse knowledge of the nature of insanity

itself. To the new school of criminology is due the merit of pointing out the relation between insanity and crime. The asylums for criminals should be restricted only to such insane criminals whose pernicious tendencies, through a certain complexity of circumstances, can never be eradicated; so that their liberation will be fraught with danger to the community; the others, such for example in whom insanity develops during their detention, or those with slight forms of imbecility, may be left in penitentiaries, there to be watched and treated. For these latter special departments should be established in the various detention houses (such are already to be found in some jails in Germany), under the care and guidance of physicians more or less skilled in the problem of treating the insane.

(Vol. V, 1902, Nos. 3, 4 and 5, March, April, May.)

1. The Neapolitan Gypsies. A. DE BLASIO.
2. The Criminal Soldier. F. SAPORITO.
3. Tuberculosis and Insanity. A. GRIMALDI and F. SCOTTI.

1. *The Gypsies*.—An interesting article on the comparative anthropology of the gypsy.

2. *The Criminal Soldier*.—This is a series embracing observations and histories of eighty-five subjects, classified in certain anthropological categories.

The whole series presents first of all a variegated collection of hereditary mental defects, including insanity, epilepsy, hysteria, criminality, alcoholism, consanguineous marriages, etc.—a rich pabulum for the future criminal to grow on. And, as a matter of fact, the subjects themselves show in their anamnestic data the full effects of the hereditary influences, what the author calls an "aberrant" organic development; among these data we find most predominating abnormalities of the nervous system: such as "convulsibility" in the early years, nocturnal enuresis extending even into adult life, somnambulism, vertiginous attacks, etc. Their moral nature, the way "they thought, felt and acted," is fully in accord with what could be expected from their heredity and personal anamneses. Indeed, the personal observations and a detailed classification of their defects, show that the series ran the whole gamut of degeneracy, vice and crime: habitual alcoholism, general dissolution, extreme irascibility, marked precocious criminality, etc. Special attention is drawn to the fact that both the insanity and the delinquency were of a precocious nature. Finally two tables containing the morphological and functional stigmata of the subjects complete the picture of the series. Among the first are found cranio-facial asymmetries of various forms,—acrocephaly, clinoccephaly, prognathism, prominent zygomata, precocious calvities, asymmetrical ears, etc.; then, gynecomastia, disproportionate genitalia, and so on; among the latter, various tics, tremors, nystagmus, strabismus, exaggerated reflexes, ankle clonus, dermatographia, hyperesthesia cutis and the like.

The subjoined detailed personal observations of individual subjects of the series are of great interest, but do not lend themselves to abstraction.

3. *Tuberculosis and Insanity*.—The frequency of mental decay among phthisical patients had been observed by many investigators. Féré had long ago found phthisis quite prevalent among epileptics, while in tubercular families nervo-psyche degenerations are far from being rare. One of the present authors presented some time ago the genealogical tree of a paranoiac of a greatly tainted family, whose decadence dates from a tuberculous forefather. Tuberculosis may well be placed in the same cat-

egory with syphilis, alcoholism, and pellagra among the pernicious factors in the development of the race. The present investigation is based on statistics supplied by several asylums which were addressed on the question of insanity and phthisis. (A procedure which would be of great value if instituted by the proper authorities here.) Out of a total of some sixteen thousand insane there were over nine hundred phthisical sufferers of whom eight hundred died during the last half decade. Unfortunately no definite data could be obtained as to the period when tuberculosis developed (before or after the appearance of insanity), although it may be stated in a somewhat general way that in the majority of cases phthisis developed while in the institution. It was shown clearly that hereditarily there was in the majority of cases a neuro-psychopathic tendency in the family; the phthisical process exerted generally a very deleterious effect on the course of the mental malady; while some few cases showed some amelioration and even mental lucidity in the last moments of life. In view of the fact that the unfortunate insane in his search for a remedy for mental rehabilitation falls a prey to a far more terrible physical malady, the author recommends that insane asylums should be provided with special isolation wards for phthisics, and even that special asylums be founded for the care of phthisical insane.

In connection with this it is interesting to compare the Report of the Tuberculosis Committee of the Medico-Psychological Association of Great Britain and Ireland, abstracted in the November issue of the JOURNAL.

ALEX. ROVINSKY (New York).

Neurologisches Centralblatt.

(1902, Vol. 21, No. 15,, August 1.)

1. An Unusual Case of Facial Spasm (Myokymie) Occurring in the Distribution of the Left Facial Nerve. M. BERNHARDT.
2. On Insanity Following Experimental Autointoxication. Thyroid Psychoses in Dogs. F. BLUM.
3. On the Subcortical Origin of Isolated Muscular Spasms. J. SORGO.

1. *Facial Spasm*.—The presence of persistent hypertonicity of the facial muscles of the left side, associated with constant fibrillary tremors in the same distribution, in a woman of twenty-eight years, disappearing after two months, led the author to class this under those already reported as myokymie. The distribution affecting the face is unique.

2. *Experimental Psychoses in Dogs*.—Blum, after an extensive series of experiments on dogs comes to the conclusion that the thyroid is a toxin-destroying organ, the toxin being removed from the circulation and destroyed by its activity. He further believes that the toxin is elaborated in the intestinal canal from albuminous products. Animals deprived of their thyroid glands often manifest peculiar psychical symptoms, including hallucinations, character changes, loss of attention, etc. The tetanic attacks vary considerably in different animals; in some simple extensor cramp, in others clonic movements, etc., were observed. The psychic disturbances lasted from a few days to many weeks, and in some were distinctly periodical in character.

3. *Isolated Muscle Spasms*.—To be continued.

(1902, Vol. 21, No. 16, August 16.)

1. Pupillary Inertia in Accommodation and Convergence. J. STRASBURGER.
2. Multiple Neuritis and Basedow's Disease. T. DILLER.

3. Spinal Cord Degenerations in a Case of Old Arm Amputation. LUDWIG ROSENBERG.

4. The Tract "X" in the Lower Cervical Region. PURVES STEWART.

5. Subcortical Origin of Isolated Muscle Spasms. A Contribution to the History of Quadrigeminal Tumors. JOSEF SORGO.

1. *Pupillary Inertia*.—A report of two cases of hereditary syphilis and a case of multiple sclerosis, presenting a very marked slowing of the iris, contraction to light and accommodation. In the case of multiple sclerosis the dilation of the pupil on the affected side took 10-15-20 seconds, in the unaffected eye two to three seconds. In the first case of syphilis the right pupil was rigid; the left exhibited a typical slow reaction. The phenomena were present on both sides in the second case of syphilis.

2. *Multiple Neuritis and Basedow's Disease*.—An excellent report of a case of exophthalmic goiter in a woman of forty-six years, complicated by multiple neuritis which the author thinks was of toxic origin, and due to disturbance of the function of the thyroid gland.

3. *Spinal Cord Degenerations in Old Amputated Arm*.—The spinal cord of a fifty-two year old woman whose left arm had been amputated thirty years previously above the elbow, was carefully studied. The spinal cord in the lower cervical segments was smaller on the left side. The cell changes were marked. From the sixth cervical to the first dorsal segments the antero-external cell group had disappeared. In the eighth cervical and first dorsal the antero-median cell group had disappeared. The posterior horn was also atrophied. This would therefore give a localization for the forearm and hand muscles in the sixth cervical to the first dorsal segments of the cord inclusive.

4. *The Tract "X"*.—A controversial discourse on the difference between the tract described by Stewart (tract X) and the tract described by Spiller. Stewart maintains that they are different fiber tracts.

5. *Isolated Muscle Cramp*.—To be continued.

McCARTHY (Philadelphia).

Revue Neurologique.

(1902, Vol. 10, No. 10, May 30.)

1. Multiple Sclerosis with Transitory and Recurring Symptoms. Paralysis of Eye Movements in Right Binocular Vision and Later in Left Binocular Vision. GILBERT BALLEZ.

2. Two New Cases of Lesions Confined to the (Bourrelet) of the Corpus Callosum. J. PELNAR and VL. SKALICKA.

3. A New Method of Cerebral Measurement. Relative Atrophy of the Parietal Lobe by Comparison With the Frontal Lobe in Insanity. MAURICE DIDE and LOUIS CHENAIS.

4. A Parasite Found in the Blood of Epileptics. BRA.

1. *Multiple Sclerosis with Transitory and Recurring Symptoms*.—At present there is little difficulty, the author says, in the diagnosis of multiple sclerosis; nystagmus, vertigo, derangements of vision, scanning speech, intention tremors in head and arms, and spastic paraplegia are regarded as infallible evidences. Yet formerly the evolution of multiple sclerosis of which the present case is a good example, presented many difficulties which interfered with a successful diagnosis. The patient was a woman of thirty-eight years, married, who, although never robust, had enjoyed good health up to January, 1887, when after some preliminary symptoms of illness, she was attacked by binocular polyopia, which did not affect the vision when she looked to the extreme right or closed one eye. There was some weakness of the left side of the body,

sensibility was diminished and the pharyngeal and corneal reflexes were abolished. These phenomena appeared rapidly, then grew slowly less, disappearing altogether at the end of three weeks. After an interval of five years, in January, 1892, without any apparent exciting cause, she was seized with spasm of the left side of the face, followed by binocular diplopia involving the whole visual field, accompanied by intense vertigo and vomiting. The patient could not walk without assistance and complained of a sensation as if a ball were rolling about in her head. After about five days these phenomena disappeared with the exception of the last, and until January, 1893, she enjoyed fairly good health. At the end of that period on rising one morning she experienced nausea, vertigo and numbness with derangements of vision. Numbness of left side increased and there was difficulty in speaking and walking. Diplopia reappeared, both vertical and lateral, and there were spasmodic contractions of the left side of the face with right peripheral facial paralysis. This condition continued for about two years, but during the year 1895 the phenomena gradually subsided and but for a slight lateropulsion to the right and some difficulty in maintaining equilibrium the patient's health was satisfactory until the fifteenth of May, 1901. On that date vertigo and diplopia reappeared with paralysis associated with the lateral movements of the eyes to the right. These difficulties increased, walking became impossible, although muscular force was retained. The diplopia then gradually disappeared together with the other symptoms, although nystagmus persisted and the patient could not hold herself upright. Most of the reflexes were exaggerated, but there was no trace of facial paralysis. An examination of the eyes revealed nothing especially abnormal. The condition of the patient gradually improved, so that in a few weeks she was able to walk when assisted. Shortly after vertigo reasserted itself, but diplopia did not return. Whenever the patient attempted to walk she was seized with tremor, and although the right hand was quite steady the left was so tremulous as to be practically useless. This mode of evolution by successive attacks with suspension and intermission of symptoms is not new in the history of multiple sclerosis, but it rarely manifests itself in as striking characteristics as those of the case here presented, which is chiefly remarkable as a demonstration of the possibility and frequency of associated paralysis of the eyes in multiple sclerosis.

2. *Two New Cases of Lesions Confined to the (Bourrelet) of the Corpus Callosum.*—Two cases are here presented as a continuation of the researches of Marie regarding a peculiar lesion of the corpus callosum. In the cases now under consideration the lesion is confined to the (bourrelet) of the corpus callosum. As in the cases before considered, there was a brownish coloration extending in the second instance to the ependyma of the internal wall of the posterior cornua right and left. There are few similar instances reported in literature, and the importance of new researches is evident. In the first case here considered the lesion was confined to the lowest anterior portion of the (bourrelet). The "yellowish-gray" color was darker in the right half of the splenium. Laterally it extended only to the internal wall of the postcornu. Beside diffuse arteriosclerosis in the left hemisphere there was complete destruction of the third posterior of the hippocampus, of the lower lingual gyrus and the upper part of the fusiform gyrus. The occipital point, the calcarine fissure as well as the cuneus, were untouched. Another focus of softening was in the white matter of the left external wall of the posterior cornu. This lesion might be explained as a degeneration secondary to the lesion of the lingual and fusiform gyri, but there are certain cir-

cumstances which render this explanation unsatisfactory. There is a disagreement between the extent of the hemispherical lesion and that of the so-called degeneration of the splenium on the side opposite to the hemispherical lesion and a lack of coloring on the right surface of the fornix. Moreover no such explanation can possibly hold in the second case. Here the brownish color extended entirely over the lower half of the (bourrelet) of the corpus callosum, being darker in the right half of the splenium and reaching as far as the right internal wall of the postcornu to the left surface of the lower part of the fornix. There was diffuse arteriosclerosis in the hemispheres, but with the exception of little gaps in the left lenticular nucleus no localized lesion either of the cortex or the subcortex. The lesion of the splenium resembled that of the preceding case. The hypothesis of secondary degeneration was disposed of by the absence of extended destruction of the cuneus and of the posterior and internal parts of the temporo-occipital lobe. If this last case be compared with the second of those previously presented by M. Marie it is found that there was almost the same extent of the brownish coloring of the surface of the splenium and the same absence of lesions of the temporo-occipital lobe and the cuneus. In the first case here considered a small cystic cavity in the middle of the affected area of the splenium would seem to prove the primary lesion in the splenium.

3. *A New Method of Cerebral Measurement.*—While the ordinary method of weighing the different parts of the brain is useful in comparing the anatomical differences of its various parts, this plan is too arbitrary to be practical when considering the abnormal proportions of the brains of the insane with a view to obtaining measurements of the relations of the various lobes to each other. Moreover, an exact separation of the different parts is well nigh impossible, as one cannot always make arbitrary divisions. But there are certain points in the brain cortex which are easily determined, and using these as starting points one can estimate roughly the area of the included surfaces, and make comparisons from one head to another. These measurements must be made as soon after death as is possible, in order to obtain the best results, as there is always a tendency of the convolutions to flatten, especially after the removal of the pia mater. For this reason many of the present measurements have been made without lifting the pia mater, and with a little practice the fissure of Rolando may be easily located. When the brain has been preserved in formalin the measurements are much easier, as the surface is then hardened. The details should be consulted in the original.

4. *A Parasite Found in the Blood of Epileptics.*—In a previous paper the announcement was made that the examination of the blood of seventy epileptics had revealed the presence of a parasite at certain periods of the disease. Cultivation of these parasites has now made a more complete account of them possible. The blood was examined just before the beginning of the attack and also during its course. Blood obtained after the paroxysm had passed gave varying results. In some cases no micro-organisms could be detected, only the hyperleucocytosis observed by Kroumbmiller and a very active phagocytosis. The parasite is apparently present only at certain times. In blood obtained just before the paroxysmal attack small points, single or as diplococci were perceived moving about or united in masses vermicular in appearance. Examination of their structure showed that they are composed of grains of irregular shapes, and can readily assume an infinite variety of combinations. The number of those parasites found varies greatly in different individuals, but examination of a large number of healthy subjects failed to reveal

any similar micro-organism present in the blood. Cultures were made and from these intravenous injections upon rabbits. When administered in any large quantities the animals were either seized with convulsions terminating in death, or with simple rigidity, contractions, dilation of pupils, etc., and after the crisis emission of urine, relaxation of muscles, lowering of temperature, torpid condition for about an hour, and then a return to normal conditions. The varying severity of the attacks was probably due to the difference in the virulence of the infection. It is to be hoped that further experiment will enable the control of the amount administered. To what place shall these micro-organisms be assigned? The most recent experiments would suggest that they be considered as micrococci presenting themselves in the form of diplococci, and short chainlets capable of extension so as to take on the forms of coccobacilli, diplobacilli and streptobacilli. The frequent junction of the parasites and the hematin, the pallor and alterations of the parasites during the crisis period, the disappearance of a certain quantity of hemoglobin, the modifications in the coloring and consistency of paroxysmal blood which have been observed for a long time, altogether indicate that, like the agent of paludism, the parasite under consideration, lives at the expense of the normal elements of the blood.

Taking into consideration the fact that rare or absent during long intervals between seizures, the parasite shows itself in increasing quantities before the attack, lessening or even disappearing after the convulsive crisis, the epileptic attack may be regarded as a series of infections in which the convulsive crisis is parallel to the fever crisis of malaria. This also explains the intermittent periods. The securing of cultures and the results of inoculation leave little doubt, writes the author, that the micro-organisms here described are the pathological agents of epilepsy and that the symptom-complex which characterizes the disease is a result of the irritative action which they exercise over the different nerve centers through the medium of the circulation.

Revue Neurologique.

(1902, Vol. 10, No. 12, June 30.)

1. Progressive Muscular Atrophy (Aran-Duchenne type) with Intermittent and Temporary Contraction. HENRI MEUNIER.
2. The Sensibility of the Skeleton. MAX EGGER.
3. A Case of Pellagra Accompanied by Retraction of the Palmar Aponeurosis. PARHON and M. GOLDSTEIN.

1. *Progressive Muscular Atrophy.*—This author relates the history of a patient aged forty-three years, a hotel porter. His antecedents gave no reason to suspect syphilitic affection or the result of alcoholic over-indulgence. The first indication of the presence of the disease was a gradually increasing weakness of the right hand, which soon made writing impossible. The paralysis gradually progressed up the arm to the shoulder, but was not accompanied by any pain, except occasionally involuntary spasms with sensation of heat and smarting. From these symptoms the diagnosis of syringomyelia was made and electrical treatment applied. The paralysis extended to the left hand and then to the right leg. The examination made at this point revealed no loss of the different sensibilities. The right arm was limp and emaciated, the fingers almost powerless, all movement difficult or impossible. The left hand only was affected and that in a less degree than the right. The legs were weak, often contracting during the night, and straightened with difficulty on arising, so that for the first hours of the day the patient was

unable to place the sole of the foot upon the floor and was compelled to walk on his toes. There was no tremor, but he had fibrillary spasms which were plainly visible. The application of electricity gave the following general results: faradic excitability was less in all the muscles of the right side compared with those of the left; voltaic excitability seemed generally diminished. The two patellar reflexes were perfectly normal, and the ulnar equally so. The left wrist reflex was normal but the right inappreciable. Apart from the muscular atrophy itself there were no trophic disturbances. There were no vasomotor disturbances, yet the patient was subject to excessive sweating, occurring almost without an exciting cause and often accompanied by a sensation of heat in the right shoulder. The author sums up these symptoms, which in his opinion give a clear case of Aran-Duchenne's disease, and by a careful comparison eliminates the first diagnosis of syringomyelia, and several others that might at first seem to be indicated. The phenomena mentioned of difficulty in extending the leg when it contracted during the night, and the inability to place the sole of the foot on the ground would seem to be a new one in the history of this disease, although instances somewhat similar have been recorded. It is somewhat difficult of explanation, for it is evidently not a sclerotic retraction as it occurred before the atrophy of the limb. It is the author's opinion that it was produced by a slight extension of the lateral cord in a certain part of his dorsolumbar medulla (pyramidal tract) in the process of sclerosis.

2. *The Sensibility of the Skeleton.*—Our knowledge of the degree of sensibility of which the bones are capable is as yet very limited. The usual method of percussion can only be satisfactorily employed when the intervening skin and muscles are entirely anesthetic. This author has previously demonstrated that the molecular vibrations of a tuning fork are perceived by the bones when the intervening tissue is unaffected. In some cases of tabes the bones have been found to be without sensibility when it was normal in the skin and muscles, and in one case of Pott's disease with absolute anesthesia in the three modes of superficial sensation in the lower limbs, the vibrations of the tuning-fork were plainly felt by the bones. According to the opinion of this author the perception of segmentary attitudes of the limbs is not due to muscular sensibility, but he admits the question is not definitely settled. He has, however, often observed cases where there was loss of perception of segmentary attitudes, but the patient still retained the sensation of vibration upon the bones. The examination of a case of lateral amyotrophic sclerosis in which the two upper extremities were affected by excessive muscular atrophy showed that vibration just perceptible in a normal individual was quite as plainly perceived in the atrophied limbs of these patients. Various experiments have gone far to prove that the sensation of vibration is felt only by that part of the skeleton upon which the tuning fork is directly placed. Anesthesia of some parts often exists when other parts are unaffected. In cases of painless spontaneous fractures in tabes and other affections these fractures were anesthetic to vibrations, although in one case the sensation was found to be not only present but exaggerated.

3. *Pellagra Accompanied by Retraction of the Palmar Aponeurosis.*—These authors relate the history of the case of a man of twenty-seven years. At the age of six years he had been subject to paroxysms during the night, the precise nature of which could not be learned. These had ceased about his sixteenth year without treatment, which was thought would hardly admit the hypothesis that they were epileptic. The patient gave no evidence of hysteria. Perhaps the result of nightmare following

a fright. A little later he was often attacked by severe cramps in the left leg, and following these the characteristic pellagris erythema put in an appearance. There was also diarrhea for three years often accompanied by violent abdominal pains, and gradually the left hand became deformed and useless. The physical examination showed a tendency to carry the head a little to the left, but it was probably due to habit as the patient could place it in a normal position without difficulty. The left forearm was slightly drawn out of position and the fingers of the left hand much contracted, so that an attempt to straighten them caused pain to the patient. The integuments of the two hands were of a purplish color on both surfaces and always covered with sweat. This color was present a little less deep upon the thighs and legs. Sensations were all normal, although vision was slightly affected, a not uncommon occurrence in pellagra. Most of the reflexes were normally present except in the left forearm and hand. The memory appeared to be considerably enfeebled. The power of abstraction and mental representation was greatly altered. The patient believed himself persecuted by his relatives. There was also a tendency toward megalomania. It is the opinion of the authors that the deformity of the left hand was due to a retraction of the palmar aponeurosis, as the fact that the patient could easily move the second and third phalanges of the middle and right little finger removed the possibility of contraction or paralysis. In their opinion it was a trophic affection due to an alteration in the nervous system, although they were able only to conjecture the location of the lesion which caused it. It may possibly depend upon a lesion of the peripheral nerves, or upon alterations of the cells of the gray substance of the periependyma. JELLIFFE.

Archiv. für Psychiatrie und Nervenkrankheiten.

(1902, Vol. 36, Part I.)

1. Recent and Old Investigation of the Brain. EDWARD HITZIG.
2. A Contribution to the Pathology of Porencephaly. H. ZINGERLE.
3. Pachymeningitis Cervicalis Hypertrophica and Pachymeningitis Interna Hemorrhagica with Chronic Progressive Dementia in the Young. M. PRORST.
4. A Contribution to the Etiology of the Periodical Psychoses. CLEMENS NEISSER.
5. Metastatic Abscesses in the Central Nervous System. R. CASSIRER.
6. Diffuse Hemorrhagic Encephalo-myelo-meningitis. MARTIN BARTELS.
7. Central Neurofibromatosis and Tumors of the Cerebello-pontine Angle. HENNEBERG and MAX KOCH.

1. *Recent and Old Brain Researches.*—A detailed study of the methods and results of brain investigations and experiments. Too extensive and detailed to admit of a satisfactory short summary, but withal an important series of contributions.

2. *Contribution to the Pathology of Porencephaly.*—The brain was obtained from a laboring man who, during life, showed no evidences of paralysis and whose death was caused by an injury. On the outer surface of the left hemisphere there is an extensive defect (*einsenkung*) including the greater portion of the central convolutions, the supra-marginal gyrus and the posterior portion of the second and third frontal convolutions, the area corresponding to the second and third branches of the Sylvian artery. Over the depression the meninges were thickened and the cortex atrophic (microgyra). The deficiency exists chiefly in the subcortical white substance, which is replaced by a dense scar tissue. A

few scattered areas are present in the cortex. In the opposite hemisphere, symmetrically situated, was a small sub-cortical cyst. The author, who had made a very elaborate study of the case, believes the condition to have been of pathological origin, occurring during intra-uterine life (*i.e.*, not a developmental defect). Kundrath suggests that such cases are of vascular origin, the vessels not being completely occluded. This forms an impediment to the circulation, which affects chiefly the deeper structures, because of the greater blood pressure required and the meager possibilities of collateral circulation. The advanced state of fissuration in the diseased area renders the later part of fetal life as the probable time of onset. The other portions of the affected hemisphere and that part of the opposite hemisphere, corresponding to the defect had undergone a considerable hypertrophy. This curious vicarious growth may compensate for the loss of substance incurred and explain the absence of symptoms.

3. *Pachymeningitis Cervicalis Hypertrophica and Dementia in the Young*.—Case I. Age fifteen years, syphilitic taint (?). When thirteen years old a severe occipital trauma occurred, followed by convulsions, later headache and vertigo. Convulsions recurred. Paresthesia present. Progressed slowly to dementia. The pupils were unequal, stiffness of neck, incontinence, atrophies in the face and extremities (degeneration reactions), legs paralyzed, slight claw-hand. Objective sensory disturbances were present; blind and deaf. Discs normal, no fever throughout, the pulse slow. Autopsy revealed a pachymeningitis interna hemorrhagica with atrophy of the subjacent cortex. Pachymeningitis cervicalis hypertrophica with cervical myelitis. Lumbar and sacral cord free. Degeneration of the pyramidal tracts in the cord only.

Case II. Age thirteen years, no hereditary taint. Rickets. Began with loss of memory, progressing slowly to dementia. Pupils unequal, nystagmus. Optic atrophy due to a chronic choroiditis. Jacksonian epilepsy in both sides. Atrophy of the small muscles of the hand (reaction of degeneration). Stiffness of the neck. Afebrile throughout.

Autopsy—Atrophy and chromatolysis of the ganglion cells of the cortex. No pachymeningitis interna. Well marked pachymeningitis cervicalis hypertrophica but without myelitis or degeneration of the pyramidal tracts. Similar in the two cases were: the age of two patients, the complete dementia, the afebrile course and cervical pachymeningitis. In both cases the process began in the brain, only after a perceptible interval extending to the cord. Thus supporting the theory of Köffen-Weiting that the cervical pachymeningitis is but the intimation of a meningoencephalitis.

4. *Contribution to the Etiology of Periodical Psychoses*.—Clemens Neisser says the important etiological factors in the production of the periodical insanities are: Heredity, trauma and organic cerebral disease. Those originating from organic disease showing a tendency to dementia. He reports a case following an apoplectic seizure, of the typical circular type. Mention is made of a case in which a stroke of lightning was the only demonstrable cause. Also a case following a trauma in which group of cases the prognosis is especially favorable. A wide mobile pupil during the interval is thought to indicate a persistence of the malady, although the patient may appear quite well.

5. *Metastatic Abscesses in the Central Nervous System*.—The author reports two cases of abscess formation in the pons and spinal cord respectively.

Case I. Onset with headache and fever of a pronounced hectic type. Five days later paresthesia and objective sensory disturbances on the left

side. Paralysis of the right abducens and seventh nerves. Keratitis neuro-paralytica in the right side. No paralysis of the extremities. Later stupor and optic neuritis. Death in coma twenty-one days after the onset.

At the autopsy a solitary abscess occupying the right half of the pons was found. Also multiple abscesses in the liver and lungs. The only explanation of the bacterial infection was found in a small ulcer in the vermiform appendix caused by a fish-bone. In the literature the author has collected thirteen reliable cases of abscess of the pons and medulla oblongata. Of these three were confined to the medulla. Abscesses in this region are nearly always metastatic. Some of the sources of infection are bronchiectasis, prostatic abscess, middle ear disease. Trauma, carious process in the bones of the skull and suppuration of the accessory sinuses, so commonly the cause of abscess formation in the cerebrum and cerebellum, is rarely affective in this locality, due to the anatomical relations and protected situation of the parts. The striking immunity of the brain stem to abscess formation of metastatic origin, has led some writers to suggest a chemical peculiarity as the possible explanation. Martins would seek the explanation in the general laws governing non-septic embolism, so common in the middle cerebral and so rare in the vertebrals or basilar. The spinal cord is likewise rarely the seat of abscess formation. Chiari was able to collect fourteen cases.

Case II. In the cord of a woman who had presented the symptoms of an advanced syringomyelia, myriads of minute abscesses were found, the largest scarcely visible to the naked eye. These miliary accumulations of normal cells were sharply circumscribed, and were found chiefly in the lumbar region most numerous in the gray matter and usually perivascular. The source of infection had been a fresh endocarditis. There were also infarcts in the spleen, lungs and kidneys.

6. *Diffuse Hemorrhagic Encephalo-mycelo-meningitis.*—Martin Bartels reports the case presenting a variegated picture of cerebro-spinal disease. Headache, stupor, convulsions, vertigo, transient attacks of aphasia and paralysis. Optic neuritis. Hyperesthesia of the special senses. Dermographia and transient flushings of the face and body. Slight albuminuria. Histological examination disclosed a remarkable process, affecting the veins of the central nervous system. A periphlebitis, phlebitis and a large celled endophlebitis, analogous to Heubner's endarteritis. The arteries apart from the periarteritis presented no change. Nowhere was an endarteritis demonstrable. The intense proliferation produced nodular and semilunar elevations, sometimes concentric. The lumen was not obliterated and nowhere could thrombi be demonstrated. Giant cells were found occasionally, but neither gummata, tubercles nor areas of necrosis. The cord was the seat of diffuse degenerative changes. Small hemorrhages had occurred in the basal ganglia and in the cortex, but none in the cord. The degeneration in the brain was very slight. The layers of the meninges were diffusely infiltrated with round cells, as were also the perivascular lymph spaces. The kidneys did not show these changes. The other organs were not subjected to microscopical examination. These changes were attributed to syphilis and were thought to represent an early stage of the cerebrospinal affection. Mention is made of Reider's investigations, who claims that the first effect of syphilis is an endophlebitis. The large-celled endophlebitis of the umbilical vein in fetal syphilis has been confirmed by various observers.

7. *Central Neurofibromatosis and Tumors of the Cerebello-pontine Angle.*—The authors, Henneberg and Koch, present complete studies of two cases of bilateral, symmetrically situated tumors of the cerebello-

pontine angle. One was the central localization of a generalized neuro-fibromatosis, the other recurring in conjunction with multiple fibromata of the meninges. In both cases, the pontine tumors were intimately connected with the acoustic nerves and attained the size of horse-chestnuts. Attention is called to the frequency of tumors arising in this locality, springing most commonly from the eighth nerve, but also from the fifth, seventh and other bulbar nerves. Histologically the neurofibromata are most frequent, but gliomata also occur. Normally elongations of glia may be traced for about one cm. in the extra-medullary portion of the nerve-roots. The growth fills in the cerebello-pontine angle (*cerebellar-brücken winkel*) and produces a more or less characteristic syndrome. The most important and most constant symptom is an auditory paresthesia or paralysis, but this may occur late. Headache is usually occipital, but may be frontal, and rarely crossed frontal headache has been observed. The latter due to irritation of an anterior cerebellar peduncle. Common symptoms are facial paralysis, trigeminal neuralgia, cerebellar ataxia, nystagmus, rarely paralysis of the associated ocular movements. Peculiar forms of dysarthria and vasomotor disturbances have also been noted. Hemiplegia may be absent, but if present, is usually on the same side as the tumor (centro-lateral pressure against the base of the skull). It has, however, been observed on the opposite side. Tumors in this locality may simulate some of the following clinical pictures: bulbar paralysis, Menière's disease, paraplegia, aneurism, lues cerebri, and hysteria in an initial stage.

J. RAMSAY HUNT (New York).

Rivista di Patologia Nervosa e Mentale.

(1902, Vol. 7, fasc. 8, August.

1. Upon Indirect Secondary Atrophy of the Nervous Elements. E. TANZI.
2. Polyclonia in Dementia Paralytica. R. LAMBRANZI.

1. *Secondary Atrophy of Nerve Elements.*—The author reviews the literature of this subject and contributes a description of his findings in the experimental study of neuronc atrophy from functional inertia through suppression of a given function from birth. Enucleation of the eyes was practised in newborn rabbits and dogs; the animals being killed from six months to a year after operation, and the condition of the visual center studied macroscopically and microscopically. The findings are minutely described in these as well as in the case of an anophthalmic dog. The salient points in the conclusions drawn are that lesions of the nervous system of the newborn animal induce complete degeneration solely in those neurones which are directly injured. Those neurones which are simply in relation with the injured, but are not themselves involved, undergo a process of atrophy but are never entirely destroyed. As suppression of functional stimulus is incapable of causing disappearance of cells, but can only render them atrophic or arrest their development, it may be inferred that every nerve-cell has hereditary power to attain a certain degree of development and to this hereditary development is added that which is derived from its anatomical connection and consequent functional activity. Such complement of the ontogenetic development is greater in the higher order of animals which have a more "plastic" cerebral cortex and are capable of greater development. It may be inferred also that the higher orders of nervous centers are the most susceptible to the influence of suppression of functional stimuli.

2. *Polyclonia in Dementia Paralytica.*—This article follows a line of argument presented in a previous work, tending to show that myoclonia

has its origin in a deviation from the normal in the cerebral cortex. A case reported by the author in which myoclonia was the initial symptom, followed by exaggerated patellar reflex, myosis, spastic gait and psychic dulness with gradual development of a typical dementia paralytica, lends support to the author's theory of the cerebral origin of polyclonia.

(1902, Vol. 7, fasc. 9, September.)

1. Upon the Presence of Neuroglia in the Choroid Plexuses. C. CATÓ-LA.
2. Changes in the Nerve-cells in Acute and Chronic Iodoform Poisoning. R. GIANI and E. LIGORIO.
3. Contribution to the Study of the Hygric Illusion. E. RAVENNA and T. MONTAGNINI.
4. The Fasciculus of Pick. F. UGOLOTTI.

1. *Neuroglia in the Choroid Plexuses.*—In a former article, the author has published the report of a glioma at the level of the choroid plexuses of the fourth ventricle. To prove the theory then advanced as to its development from neuroglia normally existing in the choroid plexuses, he has studied numerous microscopical specimens of the choroids and has determined the existence of a delicate layer of neuroglia beneath the ependymal layer in nearly every instance.

2. *Changes in the Nerve-cell in Iodoform Poisoning.*—A report of the condition found in animals after death from acute poisoning by means of large injections of iodoform with glycerine or olive oil, and from chronic poisoning by means of small doses repeated at intervals of three or four days. For full details the reader is referred to the original article; suffice it to say that no part of the cerebrospinal system was exempt from the noxious influence of the drug; cellular degeneration and chromatolysis being widespread.

3. *Contribution to the Study of the Hygric Illusion.*—An interesting case, in which hygric illusions were a prominent characteristic, is reported by the authors, who discuss the center to which such illusions are referred and, from the findings at autopsy in the present case, consisting in various deviations from the normal in the hippocampal convolution, contribute further support to the hypothesis that hygric illusions may be referred to that area.

4. *The Fasciculus of Pick.*—This anomalous fasciculus has been found in the medulla oblongata by the author in three cases out of twenty-six. Its point of greatest size was found at a level with the decussation of the pyramidal tracts, from which point it decreased toward the inferior portion of the bulb. Ugolotti leans to the belief of Hoche that the fibers of the fasciculus are derived from the pyramidal tracts. The question of their distribution is taken up, but no definite conclusion is reached.

FIELDING (New York).

Nouvelle Iconographie de la Salpêtrière.

(15th Year, No. 3, May-June, 1902.)

1. Three Cases of Cerebral Neoplasm. G. BALLET and ARMOND-DELILLE.
2. Description of a Case of a Rare Monstrosity of a Face and Head. HAUSHALTER and BRIQUEL.
3. Psychasthénic Syndrome of Akathisia. F. RAYMOND and PIERRE JANET.
4. Biological Life of a Xypophagus. VASCHIDE and VURPAS.
5. A Case of Hemimelia of the Right Lower Extremity, Studied by Means of a Radiograph. INFROIT and HEITZ.
6. A Case of Eunuchism of a Family Type. P. SAINTON.
7. Vesical Calculi in Holland. BOLK and MAYET.

1. *Cerebral Neoplasm*.—An account of three cases of cerebral tumor with autopsy findings, which present some unusual features.

Case I—Man, 53 years old; headache, right hemiparesis, slight speech trouble, not, however, aphasic; coma, deaf. Autopsy: gliomatous tumor about the size of a walnut, located on the posterior part of the third frontal convolution of the left hemisphere. It is interesting in this case to note that, although the tumor was of large size and compressed the foot of the third frontal left, it did not extend far beyond the motor area.

Case II—Appearance at ten years with epileptiform attacks during two years following. Apparent return of health, then headache, with trophic symptoms located in the head, especially in the left parietal region, facial hemiparesis on the right side. Renewal of epileptiform attacks, vomiting, incomplete right hemiplegia, without aphasia, prolonged terminal period, with stupor and death. Enormous sarcoma, the size of an orange, compressing the left frontal lobe. The remarkable toleration which the brain exhibited for a growth of this size is worthy of attention. Although the tumor was so large that it caused direct trophic changes on the skin, hair, and skull, lying directly over it, by pressure, yet, with the exception of a slight facial paralysis, no grave motor symptoms were noted. In this case also the absence of aphasia, in spite of the pressure on both Broca's convolutions, is noted. This case would tend to show that the gray substance of a convolution can be compressed to a great degree without its function being markedly affected, provided always that the increase in pressure proceeds slowly and progressively.

Case III—Following a trauma of the head in a man 19 years of age, rapid development of paralysis of the intrinsic ocular muscles and Jacksonian epilepsy, progressive; difficulty in swallowing, profound torpor, death. Diffuse gliomatous infiltration, predominating on the anterior two-thirds of the convolution of the corpus callosum of the right hemisphere. This case shows the following points of interest: Diffuse gliomatosis; traumatic origin; symptoms suggesting in the beginning a bulbar affection.

2. *Rare Monstrosity of Face and Head*.—An account of a monster showing an arrested development of the face, deformity in the hands, feet, brain and skull. The cause of all of these defects of the brain was probably a hemilateral hydrocephalus. The article is illustrated with clear photographs and contains exact descriptions and measurement of the subject.

3. *Psychasthenic Syndrome of Akathisia*.—Haskowec of Prague reported to the Neurological Society two cases of a peculiar nervous malady which he called Akathisia, or the impossibility of seating oneself. This paper is an account of such a case, observed at the Salpêtrière. Man, 42 years old. When he sits down in a chair he becomes greatly embarrassed and shows evidence of great mental and physical suffering. He twists his body about, alternately flexing and extending his legs, allows his head to fall on the left shoulder, and at the same time breaks into a sweat and has attacks of palpitation of the heart. His expression shows great pain, terror and suffering. At length, unable to hold himself any longer in the chair, he rises quickly and the attack ceases completely. Haskowec considered that this syndrome bore some resemblance to the astasia-abasia of hysterical subjects, but Raymond believes that it is of different type entirely, and for the following reasons: (1) The patient is able to sit down and to remain seated, the symptoms only beginning after the lapse of a certain length of time. (2) Even

when the attack begins, it is only necessary to question the patient or to speak to him, when he becomes quiet. (3) He does not fall from his chair. (4) The cause of this attack is not due to an incapacity to remain seated, but it is an agony and suffering which develop when he is seated. The author believes that the syndrome of akathisia is of psychasthenic origin and is really a sort of profession aboulia with attacks of anxiousness. A somewhat similar case is related in the same article.

4. *Biological Life of a Xyphophagus*.—This is a very interesting study from the physiological point of view of a Chinese xyphophagus, exhibited by Barnum & Bailey at Paris under the name of the "Chinese Brothers." They are fifteen years of age and are united by a band at the xyphoid region, which, by an X-ray picture, is shown to be composed of cartilage. A careful anatomical description, illustrated by photographs and containing also accurate measurements, is included in the article. The investigation consists of studies of the pulse, respiration, muscular force, etc. The following conclusions, in brief, are noted: (1) Each subject at the same time leads a biological life with an individual life. This individual life has very definite limits from the standpoints of circulation, respiration, sensation, and muscular activity. (2) One of them is more vigorous from the point of view of muscular activity than the other. (3) In spite of the existence of these two lives, each of which reacts in a great measure to their individual laws, there is a harmonized biological life which has its origin deeply rooted in the two organisms. This life is the resultant of the two others and reduced itself to a condition of well equilibrated automatism.

5. *Hemimelia of the Right Lower Extremity*.—An article, illustrated by photograph and radiograph, of a malformation of the inferior right extremity of a woman, fifty-eight years of age.

6. *Eunuchism of a Family Type*.—The term, Eunuchoid, is given to those individuals who in many respects present characteristics commonly found in eunuchs, due to an atrophy of the testicle, resulting from localization of an infection of the testicle or by the arrested development of that organ. This article is an account of an individual who showed the personal and family characteristics from this point of view. Several members of his family, in different generations, have had the same peculiarity.

SIDNEY I. SCHWAB.

(1902, No. 4, July-August.)

1. Pure Verbal Blindness. E. BRISAUD.
2. Hallucinations of Hearing in a General Paralytic. SÉRIEUX and MIGNOT.
3. Study of the Root and Cell Lesions of Tabes. A. THOMAS and HAUSER.
4. Dementia Præcox and Katatonia. J. SÉGLAS.
5. Multiple Exostosis with a Tendency to Suppuration. LAUNOIS and ROY.
6. Psychiatry in the Japanese Theater. GEYER.

1. *Verbal Blindness*.—A case of verbal blindness caused by softening in the left calcarine region with degeneration of the splenium and the tapetum on the right side. A man, fifty-seven years old, entered the hospital with a history of blindness, which had existed for several months. On examination it was found that he was not blind, that he could write, but that he was incapable of reading even his own signature. This symptom can with justice be called verbal blindness. Patient died in twenty-four hours. The localization of the lesion of softening in the occipital

zone was as follows: It occupied the posterior extremity of the internal surface of the left hemisphere. It was the so-called yellow softening, resulting from a total ischemia of at least several weeks' duration. The cortex and the adjacent parts are affected and there is some meningitic adhesion. The calcarine artery is obliterated, causing a necrosis, the focus of which includes almost the whole of the cuneus. The only parts not touched are, first, the occipital pole itself; second, the anterior superior border. The tapetum and the optic fibers, however, have completely disappeared. The degeneration of the tapetum is the necessary consequence of the lesion of the gyrus lingualis. It extends to the splenium of the corpus callosum.

2. *Hallucinations of Hearing in General Paralysis.*—The study of the sensory forms of dementia paralytica have up to this time been singularly neglected in spite of their importance and frequency. The authors have recently observed a case in which the excitation or paralysis of certain sensory centers have produced symptoms which dominated the whole clinical picture. A man forty-one years old, in whom a delirium of persecution and of grandeur has become systematized under the influence of sensory symptoms with hallucinations of hearing, smell, taste and general sensibility, forms the subject of this paper. Several times his sensory delirium has been interrupted by epileptiform attacks. At the autopsy a diffuse meningo-encephalitis was found with foci sharply circumscribed and located on the posterior aspect of the brain. The anterior aspect of the brain was relatively free from lesions. A knowledge of this clinical and pathological fact is of importance from the diagnostic point of view. The existence of a delirium based upon hallucinations and the observation of symptoms such as verbal blindness and sensory aphasia, usually caused by focal lesions (softening, etc.) should not necessarily carry with them the usual diagnosis of diffuse meningo-encephalitis, but should suggest the sensory form of dementia paralytica, which depends upon the existence of foci of meningo-encephalitis, more or less circumscribed and limited to the posterior portion of the brain.

3. Continued article.

4. *Katatonía and Dementia Praecox.*—In 1874 Kahlbaum described, under the name of katatonía, a symptom-complex with a cyclic evolution, the chief symptoms of which were a spasmodic motor trouble of the nervous system. (*Spannungs Irrsein.*) Since then katatonía has been the subject of numerous investigations, until Kraepelin brought forward his well-known theory that hebephrenia and katatonía are not separate conditions, but are phases of one morbid state to which he gave the name dementia praecox. The following are the chief general conclusions which have been advanced by Finzi and Vedrani: 1. The syndrome of katatonía is found more or less pronounced in many forms of mental disease. 2. It never forms a definite clinical picture. It is not a complete disease, and occupies only certain periods of the morbid process. 3. It is found most completely and most permanently developed in cases of dementia praecox, which have the closest relation to hebephrenia. The principal symptoms which, since the time of Kahlbaum, are considered under the name of katatonía, are stereotypy of attitude, words, acts, strange and absurd, and a tendency towards cataleptic immobility, with a tension of the muscles almost tetanic, and a rigidity more or less pronounced and permanent. This symptom-complex being present in repose, becomes exaggerated in the resistance opposed by the patient to passive movements, a resistance which explains the patient's refusal to take food and his absolute mutism. Kahlbaum gave the name *Negativismus* to this group of

phenomena of opposition. To illustrate these symptoms and the foregoing conclusions, the author describes three typical cases of katatonia.

5. *Multiple Exostoses*.—Numerous cases of multiple exostoses have been published in the last two years. In a recent article, Auvray and Guillain have noted all the known facts, together with two new cases of this condition. The objective characteristics of this disease are the symmetrical localization of the exostoses in the extremities of the long bones, grouped usually about the epiphyseal cartilages and developing at the same time with the skeletal growth. They can remain unnoticed for a long time, can persist indefinitely, and even sometimes showing a tendency to disappear. They are usually painless, but are capable of causing symptoms by pressure. The case which is here reported, as an illustration of this disease, is a man thirty years old, with multiple exostoses, some of which are accompanied by suppuration. In addition, the patient shows a symptom of syringomyelia, a Morvan hand, and sensory symptoms, characterized by hemianesthesia and a thermo-anesthesia of the left side. The exostoses are present in various parts of the body, which a diagram and a radiograph well illustrate. The author concludes as follows: 1. The pathogenesis of this disease is not known. 2. Perhaps it is dependent upon an affection of the nervous system not yet localized (gray matter of the cord). 3. The suppuration in this case can be explained by the presence of tuberculosis. S. I. SCHWAB (St. Louis).

Archives de Neurologie.

(1902, Vol. 13, No. 78, June.)

1. Three Cases of Hemianopsia. F. RAYMOND.
2. Contribution to the Psychology of the Genesis of Psychomotor Hallucination. N. VASCHIDE and CL. VURPAS.
3. Observations in Five Cases of Conjugal General Paralysis. P. KERAVAL and G. RAVIART.

1. *Hemianopsia*.—Using three cases as examples Raymond offers a clinical lecture on hemianopsia in which he describes the symptoms and pathological lesions in a very interesting and clear manner.

2. *Psychology of Genesis of Psychomotor Hallucinations*.—A case of psychomotor hallucinations. The patient, a woman forty-three years old, hears voices speaking within herself and, without trying to localize themselves in any part of the body, affirms that they speak to her. She moves her lips to utter the ideas of persons that talk within her and answers them. Thus she carries on a dialogue. At times she believes what she says and writes her own thoughts, and then at times she thinks they come from elsewhere. Therefore in this case the so-called psychomotor hallucinations are only the ideas of the patient of which she is conscious by exaggerated mental introspection. Ignorant of psychological laws of association, she is astonished at possession of thoughts which she knows to be contrary to her sentiments and to her moral and intellectual personality, and at once ascribes them to an exogenous origin. When the mental image produced by these thoughts is strongly enough developed, she is led to a motor reaction and articulates these thoughts. Introspection plays the principal rôle. The authors do not wish, they say, to base a theory of psychomotor hallucinations which might arise under other conditions, on an isolated case. They wish to insist only on the genesis and mechanism of the case observed. The psychological examination ought to give most important details of this morbid symptom-complex, but the examination must be complete in order that the pathogenesis be of any value. The method of considering the syndrome by itself, in its

characteristic traits, and explaining in a way to satisfy the mind, either by psychological facts, or those of psychiatry, or by other known, accepted and related phenomena, is a dangerous one. It isolates artificially the syndrome or series of facts from the unity of conditions to which it is intimately and indissolubly bound. What is needed is a complete detailed psychological examination. It is necessary to have sounded and penetrated to the depths of a subject's character before beginning the psychological experimental investigation. The observations of the subjects confirm largely the ideas held concerning the hallucinations commonly known as psychomotor. But in the study of the mental state of L—, independent of the physiological conditions, they think they can describe the mechanism and genesis even, of these hallucinations. The case is typical and therefore they have chosen it, and besides, the explanation can be supplemented by a number of indispensable elements furnished by observation. The subject under consideration does not present a case of well-defined symptoms, and would not enter into the category of morbid affections, if she had the necessary discernment between the different mental states of her distraction. There is a current opinion that the entire mental activity manifests itself in the form of a subconscious language. Subconscious language is, so to speak, the sanctuary of articulate speech, and hence of the *ego*—the conscious self—which enters into relation with the surrounding world, and which formulates acts and coördinates syllogisms. A deaf-mute has unspoken language extremely rich, although unable to articulate. It is rare that an individual can classify his thoughts or reconsider past impressions without the aid of this interior language.

The sole desire here is, without entering into discussion, to call attention to the influence in morbid psychology of this language on the systematization and origin of psychopathic trouble. This patient no doubt was ignorant of the subconscious life, and was surprised to find a physical and mental life whose origin, significance and purpose she could not understand. All this subconscious mentality furnished her the elements of hallucination by introspection. She constantly hears words as if whispered, and which persist in crossing her opinions. The attention is fixed on this phenomenon, and not finding any means to explain it, she ponders more and more over it till, in time, she comes to think that strange voices are talking and insinuating themselves into her thoughts.

What happens to L— has so far no pathological significance unless it is the adaptation of too sustained intellectual efforts, and the hasty but logical interpretation of facts which escape her in real consciousness. Each normal man may be appalled at the greatness and complexity of psychological phenomena. Many cannot fix the attention sufficiently to know this territory, and those who can are distinguished from those who present pathological trouble, by the fact that they represent the interior language as their own intellectual state. L— dissociates very minutely the articulated language from the subconscious, and here begins the pathological condition. She has not the judgment to see that the subconscious states are part of her *ego*, and by and by she attributes the "voices" to personalities identical with her former sympathies and antipathies, and suddenly begins to fight with illusory personages. Subconscious language is, therefore, the essential element of a number of psychomotor hallucinations, and perhaps of all. Instead of insisting upon accidental dynamic cerebral explosions or cortical irritation, one must study, for interpretation of this phenomenon, the hallucinations of subconscious language.

To sum up very briefly, psychomotor hallucinations can easily re-

ceive a psychological explanation on the ground of pathological introspection and attention to subconscious language.

3. *Conjugal General Paralysis*.—Fives cases are reported in which man and wife have developed general paresis. The etiological factor was not always evident, but in two of the instances syphilis played the leading rôle. In one family alcoholism is the only known cause, while in the two remaining cases cranial injury and heredity appear as causative agents in the husband, and grief and sorrow induce the disease in the wife. Regarding these latter cases, there is room for much skepticism. In three of the families the husband died first and in the other two they suppose the wife to have succumbed first. One woman developed tabes many years before there were any signs of general paresis. There was nothing of special note in the clinical pictures presented.

(1902, Vol. 14, No. 79, July.)

1. New Contribution to the Study of Vertiginous Epilepsy and Its Treatment by Bromated Camphor. BOURNEVILLE and AM-BARD.
2. Contribution to the Study of the Action of Valerian and Valerianates. CH. FÉRÉ.
3. A Parasite in the Blood of Epileptics. M. M. BRA.

1. *Treatment of Vertiginous Epilepsy*.—Bourneville, as the result of years of treatment of epilepsy at Bicêtre, advises the administration of monobromated camphor, in gradually increasing amounts. When the dose has reached to five times the initial dose, it is gradually diminished. He does not give the amount of camphor used at the start. He reports the cure of three cases of the vertiginous form by this method.

2. *Action of Valerian and Valerianates*.—In small doses they excite voluntary motion. In stronger doses they produce depression. In any strength they cause diminution of resistance to fatigue. There is thus produced an inverse effect according to the strength of drug used. The physiological action as proved by experiment also differs in an interesting way from the antispasmodic and sedative effect which empiricism attributes to the drugs.

3. See abstract from *Revue Neurologique* in this number.

(1902, Vol. 14, No. 80, August.)

1. A Case of Epithelioid Papilloma of the Red Nucleus. Contribution to the Study of the Functions of the Red Nucleus. F. RAYMOND and R. CESTAN.
2. Infantile Tremors and Congenital Nystagmus. An Attempt at Classification. LENOBLE and AUBINEAN.
3. Notes Upon a Case of Epileptic Delirium. A. PETIT.
4. The Hysteria of Saint-Theresa. ROUBY.

1. *Papilloma of the Red Nucleus*.—The case reported is of interest from both a pathological and a clinical standpoint. The tumor presents microscopically a close resemblance to the metastases formed from a growth primary in the intestinal canal. However, after a most careful search at the autopsy no primary focus was found, and the reporters have decided that the neoplasm is primary in the brain, and originates probably from the pia mater covering the crura cerebri; that it is of the

nature of an endothelioma and akin to the "cerebral papilloma" of Rindfleisch, and the epithelioid endothelioma of Triegler. Drawings of the microscopical appearance of the tumor are given. The growth destroyed the left red nucleus completely, the inner half of the right red nucleus, and both third nerve nuclei. The crura were unaffected. The Marchi method demonstrated some degeneration of fibers in the right superior cerebellar peduncle; a small number of degenerated fibers on either side of the median line in the medulla just anterior to the posterior longitudinal bundle; a few in fibers to the island of Reil; but none in the pyramidal tracts and no evidence of a red nucleus-spinal tract. The clinical picture presented was as follows: the symptom-complex of Weber, in that there was a paralysis of the left oculo-motor nerve (primarily) associated with motor disturbances of arm and leg of the right side of the body, which did not consist in a true paralysis, but merely slight paresis accompanied by incoördination and ataxia. There was pronounced titubation and the speech was affected by disarthria. The reflexes were exaggerated. From a study of the case in its clinical and pathological aspects, Raymond and Cestan conclude that the red nucleus exercises an influence over the tonus of the muscles of the extremities and that the disturbance of the motor apparatus and speech was due to the lesions in the superior cerebellar tract at the site of the red nucleus.

2. *Infantile Tremors and Congenital Nystagmus*.—This article is an attempt to make a classification of the diverse forms in which these affections present themselves. The writers base their work almost entirely on the clinical aspect of the cases and await confirmation of their ideas from the pathological discoveries of the future. They regard the tremors and nystagmus as expressions of an organically diseased central nervous system and base their argument upon the fact that in most instances either hereditary taint or some evidences of anatomical defect, such as exaggerated knee-jerks, atrophies, or epileptic manifestations are present. The case of infantile tremor which they describe belongs to the group of cases diagnosed as spasm nutans, and as indicating the presence of some underlying anatomical lesion, or at least a susceptible nervous system; they call attention to the fact that both the maternal grandfather and uncle were born blind, and that one younger brother had epileptiform attacks.

Congenital nystagmus they classify as follows: (1) Essential nystagmus, the manifestation being an isolated symptom; (2) essential nystagmus with various additional nervous symptoms, such as facial asymmetry, inequality of pupils; (3) essential nystagmus with special nervous symptoms, as exaggerated reflexes and epileptic manifestations; (4) the occurrence of the symptom in the family, either alone or associated with other nervous signs.

The pathological changes, they think, may be found at the root of these affections, the tremors and the nystagmus are malformations of motor cells in the cortex, alterations in the cells of the nuclei of motor nerves of the eye, and faults in the conduction of the axis cylinders due perhaps to changes in the myelin sheath. In certain cases, the writers think the cause will be found to lie in punctate hemorrhages at the time of birth.

3. *A Case of Epileptic Delirium*.—Petit reports this case as showing that the epileptic delirium is composed of two factors, the cerebral state and the epileptic impulse. The first of these exists independent of the patient's epilepsy and consists of the ensemble of his moral nature, his habits and his intellectual attainments. The epileptic impulse provokes the unconscious acts of the delirious state, functionates as an electric

spark, and releases the uncontrollable mental processes. But the unconscious acts of the delirium always have their origin in, and are regulated by, the previous "cerebral state" of the individual. The case cited shows this relationship. The patient, while in his normal condition, was taken to a hospital and later to an asylum for observation, because a few days previously he had been suffering from maniacal delirium associated with complete unconsciousness. Six years later he again becomes maniacal, goes to the police and insists upon being taken to the hospital where he had previously recovered from this state. He had no memory of his doings during that time.

4. *The Hysteria of Saint-Theresa*.—This is a historical study of the mental alienation of one who figured prominently in the ecclesiastical history of the sixteenth century. Rouby gives an account of three cases of suspended animation which have occurred in his practice and he demonstrates the hysterical nature of these attacks.

I. STRAUSS (New York.).

MISCELLANY.

CARCINOSIS OF THE CENTRAL NERVOUS SYSTEM. E. SIFFERT (Münch. med. Woch., May 20, 1902).

The course of carcinosis of the central nervous system is usually rapid, according to this author, and more often involves the cord than the brain. It is of comparatively rare occurrence and generally of a metastatic nature. The metastases vary widely in number and are usually situated at the border between the white and gray matter, not often larger than a cherry, and remain quite distinct from the tissues around them although it is quite possible for them to be completely overlooked at autopsy. There are no symptoms of pressure, for the growth is a gradual substitution. With the invasion of the pia the subarachnoid spaces will soon be affected and because there is less resistance offered here there is always increased growth. In the vertebral canal the tissue takes the shape of an irregular cylindrical tube, developing most fully in the dorsal region, noticeably at the point where the posterior nerve roots have their departure. The predominant pathological lesion may be inflammation and hemorrhage, which are always present. The course is very rapid although it may last for a number of weeks, the symptoms being partly mechanical and partly toxic and the last stage is that of an erosion of the nerve-substances. Unless the primary tumor, usually found in the lung, is apparent, the diagnosis is apt to be somewhat hard, but characteristics such as advanced age, increasing apathy, cachexia developing rapidly, delirium alternating with lucid intervals, speech disturbance somewhat similar to that shown in paresis, absence of choked disk, pain and stiffness of the neck, pain and disturbance of the bladder, should prevent error.

JELLIFFE.

REFLEX SPASM CAUSED BY ASCARIS. J. P. NAAB (Münch. med. Woch., May 13, 1902).

This author notes that cases of ascaris are often taken for disorders much more serious, as when a child is seized with convulsions, followed by leg coma, and a provisional diagnosis of meningitis is often made, until the stools reveal the real cause of the trouble and the administration of santonin and calomel quickly rights it. As in some quite severe cases only a few worms have been discovered it would seem to indicate that the number does not govern the severity of the symptom. An aid to diagnosis may be noted in the excessive secretion of saliva.

JELLIFFE.

FOCAL FACIAL EPILEPSY. MCCARTHY AND FRANCINE (Phil. Med. Jour., June 14, 1902).

A case of focal epilepsy, affecting the right side of the face and tongue, followed by a paralysis of these parts which endured from three to five minutes, is reported by these observers. This case, which was that of an old woman, was interesting on account of the paralysis which followed a localized convulsion. The first attack, which was possibly hysterical, followed an accidental wound in the scalp made by a hatpin, but considering the differential diagnosis of an organic lesion from hysteria, it was believed that reflex epilepsy might have been caused by intense pain. On account of the unique distribution of the paralysis in this case the authors believe that there is a small lesion of gradual development localized in the left motor area in or near the face center, which, while not sufficiently developed to cause serious disturbance of the function of the motor cells for the face and tongue, yet by irritation may lead to paroxysmal convulsions followed by paralysis.

W. B. NOYES.

TOE REFLEX. H. LEVI (Münch. med. Woch., May 27, 1902).

According to this author the Babinski toe-reflex, which is a dorsal flexion of the big toe after irritation of the plantar surface of the foot, is not entirely reliable as an indication of a lesion in the pyramidal tract. The reaction was positive in six per cent. of the cases where disease of the pyramidal tract could be definitely excluded, and only eighty-six per cent. gave a distinct primary plantar flexion. A plantar flexion is always present in functional diseases, but only in a certain number was a Babinski present, and in paralysis agitans, Huntington's chorea and epilepsy it never occurred. This phenomenon was present in two cases of recent hemiplegia, disappearing in a few days, while the paralysis gave place to a paresis, not of a functional nature, however. As no Babinski could be obtained in many cases one would be led to suppose that increased knee-jerks do not invariably signify pyramidal destruction, but on the other hand quite a number of cases are on record where there was a Babinski and without knee-jerks.

JELLIFFE.

REST IN BED IN EPILEPTIC DELIRIUM. E. MARANDON (La Sem. Méd. 1902, No. 21).

This author reports nineteen cases of epilepsy treated by rest in bed during delirium. Of these only one could be said to have received distinct advantage from this treatment. This patient's condition was so improved that the crises which before had lasted five days, when there were hallucinations of sight and hearing, refusal of food, complete sleeplessness, etc., were reduced to only three days and were much less severe. The third seizure after the use of this treatment was one of purely motor elements. The appetite of the patient was good and insomnia was not present. There was no further evidence of the crises of delirium. In three other cases the treatment did not show such good results, the crisis lasting longer, although it was perhaps less severe, but there was not constant relief. In ten cases the method proved absolutely useless and in four it was distinctly harmful. From his observation of these patients this author has adopted a varying course in the treatment of such cases. After the first active crisis, during which he observes the duration, intensity and general symptoms, if he does not think rest in bed will be conducive of benefit to the patient he does not hesitate to refuse to prescribe it, recommending instead isolation and quiet, which are generally better suited to the desires of the patient than if required to remain in bed.

JELLIFFE.

Book Reviews

NERVOUS AND MENTAL DISEASES. By Archibald Church, M.D., and Frederick Peterson, M.D. Third edition. W. B. Sanders & Co., Philadelphia and London.

This text-book having passed through two editions in as many years, is now a third time presented to the profession. In this the subject matter has been rearranged and revised with many additions. Here the allied subjects of neurology and insanity, usually treated separately, are wedded and appear under one cover. The work consists of eight hundred pages, of which the last two hundred are devoted to insanity. This union of the two subjects and the very practical spirit of the whole, renders it particularly valuable to the student and practitioner. In the section on nervous diseases, by Dr. Archibald Church, of Chicago, the clinical pictures are clearly drawn with unusual attention to their treatment and management. Pathological anatomy receives less consideration: but the essentials, necessary for a clear conception of the disease, are given.

The illustrations, diagrams, syndrome tabulations and diagnostic tables are admirably selected and adapted.

In the articles on pain, central and spinal localization and the tropho-neuroses are embodied the results of the most recent investigations on these subjects.

The section on mental diseases is by Dr. Frederick Peterson, of New York. The subject of insanity first receives treatment in a very comprehensive but concise manner from the standpoint of etiology, symptomatology, prognosis, treatment and classification. Then follow detailed descriptions of the several types of mental disease, the whole presenting this abstruse subject in a very clear, vivid and interesting manner.

J. RAMSAY HUNT (New York).

LA DÉMENCE PRÉCOCE. Par le Dr. G. Deny, Médecin de la Salpêtrière et P. Roy, Interne des Hopitaux de Paris.

Ever since Kraepelin in 1893 made use of the term *dementia præcox*, to characterize a group of fairly well recognized early dementias, this type of disease has received increasing attention. For in the young adult there is no psychosis that is of as much importance both by reason of its frequency and its gravity, as this.

The authors have here given a singularly lucid and telling account of this affection, adopting Kraepelin's modern views of the condition.

Amid the polymorphic modifications of the disease three forms stand out with greater distinctness than the rest: hebephrenia, catatonia and paranoid types.

These main symptom syndromes are excellently summarized in this small volume and it is well worthy of a wide reading.

News and Notes

A NEW BUILDING is soon to be erected at the Delaware State Hospital for the Insane at Farnhurst for the care and treatment of the tuberculous insane. It is to cost \$10,000.

THE NECESSITY of passing a new law in Mississippi is being agitated which shall specifically prohibit the sale of cocaine to negroes, on account of the increase of insanity and suicides among the race due to this drug habituation.

CHICAGO is soon to have an institution which shall give special instruction to children with speech disorders, especially to those who have lost this faculty from cerebral disease.

THE PROTESTANT HOSPITAL FOR THE INSANE at Verdun, Quebec, has just opened a new wing for the reception of eighty additional patients. This increase will bring the total population of the hospital to five hundred.

DR. PEARCE BAILEY has been appointed consulting neurologist at the Roosevelt Hospital, New York City.

AT THE LAST SESSION of the state convention of the directors of the poor at Somerset, Pa., a resolution was passed urging the state legislature to purchase Highland Inn and one hundred acres additional, for the purpose of establishing a state hospital for epileptics.

THE NATIONAL ASSOCIATION FOR THE STUDY OF EPILEPSY AND THE CARE AND TREATMENT OF EPILEPSY, had its second annual meeting at the Academy of Medicine, New York, November 5. The following papers were presented: Presidential Address by Dr. Frederick Peterson; "Medical Treatment of Epilepsy," Dr. A. Jacobi; "The Surgical Treatment of Epilepsy," Dr. Roswell Park; "The Pathology of Epilepsy," Dr. A. Meyer; "The Problem of Epilepsy; Some Suggestions for Its Solution, with Demonstration of the Lesion," Dr. L. Pierce Clark, and Dr. Thomas P. Prout; "The Social and Legal Aspect of the Epileptic," Dr. E. J. Spratling, Dr. W. N. Bullard and Dr. William P. Spratling, gave addresses. The meeting was largely attended. Dr. Wharton Sinkler was elected president for the ensuing year.

DR. T. D. CROTHERS, of Hartford Co., has been appointed consulting neurologist by the Board of Trustees of the New York Metropolitan Hospital and Dispensary.

DR. EUGENE G. CARPENTER, Superintendent of the Ohio State Hospital at Columbus, died of apoplexy October 19, at the age of forty-four. He was a graduate of the College of Physicians and Surgeons of Baltimore. He was Assistant Superintendent at the Cleveland State Hospital before his transfer to Columbus four years ago.

THE NEW ORLEANS STATE BOARD OF HEALTH reports that the suicide rate among negroes during the past ten years was 8.2 per 100,000, and is increasing rapidly, two-thirds of the increase being in the past ten years. The causes are reported to be due to illness or fear of death, and in some cases a fear of being lynched. The morphine and cocaine habits also figure prominently among the incentives. Suicide is much more common among those of mixed blood, and especially those of mixed French blood.

RESOLUTIONS to the following effect were recently passed at the International Conference on the Treatment of the Insane which was held at Antwerp: (1) Confinement for insane be abolished except in dangerous cases (2) The boarding-out system be instituted wherever possible. (3) Schools for the mentally weak be established under medical supervision. (4) Placing patients in asylums be under the entire control of physicians. (5) Forcible restraint in the care of the insane be entirely abolished.

THE NEW YORK STATE COMMISSION IN LUNACY has recently issued a statement declaring without foundation in fact, the assertions recently made by the political opponents of the Governor, regarding the State Hospitals for the Insane. These assertions were to the effect that owing to decreased appropriation the efficiency of the State Hospitals for the Insane had been seriously impaired; that scurvy has resulted from diminished food supply and that the hospital officials had in various ways been intimidated. The Commission defends the changes made in the pathological department and says that in consequence of improved methods of research introduced by Dr. Meyer, there is reason to hope that at no distant day tangible results will be manifest in an increase of the recovery rate. It is admitted that the hospitals are overcrowded, but it is asserted that if the contractors having buildings now in course of construction, adequate appropriation for which has been made, had complied with the terms of the contract, requiring completion of buildings for the present year, such accommodation would have been sufficient to have met every requirement. No case of scurvy the Commission states has occurred in any State Hospital since the inauguration of the State Care Act, as far as can be learned by those in responsible authority of the State Hospital. It can be asserted furthermore that at this time and for several years past the insane of the State are and have been receiving better quantity, quality and variety of food than any similar class of persons is receiving anywhere else in the United States. Regarding intimidation charges, the reports say that the rules and regulations which have been put in operation by the Commission and approved by the Governor, were prepared by the Medical Superintendents themselves, the very slight modification therein having been made by the Medical Commissioner, Dr. Frederick Peterson.

THE BEVERLY FARM, HOME AND SCHOOL FOR FEEBLE-MINDED CHILDREN at Godfrey, Ill., has recently enlarged its equipment at an expense of \$6,000, introducing a kindergarten school and an exclusive cottage for boys.

TRUSTEES of the Illinois Western Hospital for the Insane at Watertown, petitioned the legislature for an appropriation of \$450,000, the chief item of which was a new ward building at an estimated cost of \$200,000.

A NEW JOURNAL upon Neurology, Psychiatry, Psychology and allied sciences, has recently been established in Tokio, Japan, by Professor Dr. S. Kure and Dr. K. Miura.

THE CENTRAL INDIANA STATE HOSPITAL opened a new building on November 5 for the sick insane. The cost of the new structure was \$132,000.

Do our readers realize in getting the JOURNAL OF NERVOUS AND MENTAL DISEASE they have abstracts of *all*—not only one or two articles—from the following journals?

English—*The American Journal of Insanity, Brain, The Journal of Mental Science, The Alienist and Neurologist.*

German—*Allgemeine Zeitschrift f. Psychiatrie, Archiv f. Psychiatrie und Nervenkrankheiten, Beiträge zur Psychiatrischen Klinik, Centralblatt f. Nervenheilkunde und Psychiatrie, Deutsche Zeitschrift f. Nervenheilkunde, Jahrbücher f. Psychiatrie und Neurologie, Monatsschrift f. Psychiatrie und Neurologie, Neurologisches Centralblatt, Archiv f. Kriminal Anthropologie.*

French—*Annales Médico-Psychologiques, Archives d'Electricité Médicale, Archives de Neurologie, Journal de Neurologie, Nouvelle Iconographie de la Salpêtrière, Revue Neurologique.*

Italian—*Archivio di Psichiatria Scienze Penali ed Anthropologia Criminale, Rivista di Patologia Nervosa e Mentale, Rivista Sperimentale di Freniatria, Annali di Neurologia.*

Norwegian—*Tidsskrift for Nordisk Retsmedicin og Psykiatri.*

In addition the general literature of the entire world is carefully scanned and abstracted for our readers.

A WORD FROM THE BUSINESS MANAGER.

IN closing the year, the first of the new management, the Managing Editor desires to express his thanks for the aid and many helpful suggestions of the readers of the JOURNAL. It is largely due to the generous support of the Editorial Board and to the subscribers that the JOURNAL has had such a successful year.

We desire to thank particularly the directors and superintendents of the sanatoria who have stood by the JOURNAL in greater numbers than ever before, and we take this occasion to remind our readers that nowhere can there be found such a valuable collection of institutions as is represented in the DIRECTORY of the JOURNAL OF NERVOUS AND MENTAL DISEASE. We trust that the co-operation of the sanatoria will meet with the returns from our readers which they so richly deserve.

A word of thanks is also due and cheerfully rendered to the many advertisers who have contributed so widely to the success of the year's undertaking. There is no special journal in the United States that receives better support from the manufacturers of pharmaceuticals than ours, and we trust that our well wishers will remember this, and further that they will bear in mind the many warnings concerning substitution that have appeared in the Publishers' Announcements from time to time. The suit won by the Breitenbach Company concerning infringements of their Gude's Pepto-Mangan, is an instance of a righteous judgment on all such frauds. Similar attempts are being made in Massachusetts to substitute inferior products for Phillip's Milk of Magnesia and the products of Fougere, particularly their Colchi-sal, are being extensively substituted. We bespeak for these and other frauds a watchful eye on the part of our subscribers, who are desirous of getting a good article. We further desire to ask for a hearty endorsement of the generous support of the advertisers who have been so largely instrumental in aiding a journal of such a special character to exist.

For the coming year we hope to give a better journal than ever before, and we trust that the generous support given the management during 1902 will be continued during the years to come. Respectfully,

SMITH ELY JELLIFFE, M.D., Managing Editor.

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